PT7
The other terminal for IBM and ICL mainframes
FERRANTI

COMPUTER WEEKLY
Number 573 Thursday, October 27, 1977 Price 18p

Data Preparation
We have the capacity to punch your peak loads, file set-ups or regular work on 80 Column cards
Croydon: Nada Waugh 01-681 2898
Warrington: Ron Myer 0925 53391
Lowndes-Ajax Computer Service
COM Remote Computing
VM/CMS plus

NEWS IN BRIEF

White House privacy check

INTERNATIONAL data flow and the protection of personal information are now being dealt with at White House level in the US. All government departments have been asked to tell the White House of their plans to implement the Privacy Act, and a top member of the National Security Council has been given the job of finding out how US interests might be affected by trans-border data flow and by legislation controlling it.

Club in the west

THE first meeting of the West Country Personal Computing Club is to be held on October 28, at the National Union of Farmers Club in Truro. The club has been running for about two months. Aiming at the large number of small business users in the area, as well as the "personal" user, the club plans to become a focal point for advice and education in computing, and also hopes to set up a program library.

Railway network

MESSAGE switching and time division multiplexer systems valued at over £500,000 have been ordered from CASE by British Rail for its National Teleprinter network. The equipment will be located at BR's Communications Data Control Centre at Marylebone, where it will operate 367 line connections supporting 420 teleprinters.

SyFa for Tesco

A SyFa minicomputer system from Computer Automation, worth £45,000 has been bought by the Tesco group for stock control and accounting, at its House 'n' Ware warehouse at Milton Keynes. The system installed comprises a 64K CPU, two 10 Megabyte disc stores, three VDUs and two printers.

COMPEC'77 Industry launch pad

THE importance attached to the peripherals and small systems exhibition Compec by the computer industry is underlined by the number of companies which are using this year's show to launch new products or exhibit them for the first time.

Products launches are planned by **Newbury Laboratories**, with new versions of the 7000 series of display terminals; **Trivector Systems**, with the System 80 microcomputer based on the Zilog Z-80; **Delta Data Systems**, with a new text editing terminal; **Diablo**, with two printer terminals; and **Computer Aided Systems (Sales)** with a new UK designed and built minicomputer.

Compec will also see the UK and in some cases European launch of products as varied as cassette recorders from **Philips**; Teletype-compatible display terminals from **Terminal Display Systems**; the SE1000 printer and plotter from **EMI**; the Naked Mini-4 minicomputers from **Computer Automation**; and intelligent data capture terminals from **Olivetti**.

After last year's success Compec returns to the Wembley Conference Centre, North London, on November 8-10. For the first time the UK show will be organised by IPC, publisher of Computer Weekly sponsored by the paper. Compec Europe has already been successful in Brussels this year under the same sponsorship.

Over the next two weeks Computer Weekly will be running a competition for people who intend to visit the exhibition, and in the November 3 edition readers will get a comprehensive preview of the show.

NOVEL METHODS OF DATA TRANSMISSION ARE BOUND TO CROP UP FROM TIME TO TIME. DON'T LET NEWLY HATCHED IDEAS EGG YOU ON TO BIRD BRAINED SCHEMES!

Ring 01-421 0626 or Telex 923 914 (Robots G).
MODULAR TECHNOLOGY
P.O Box 117, Watford, Herts. WD1 4PD

Big profits chalked up by DP firms

RECORD third quarter profits have been announced by IBM, Burroughs and NCR, and Control Data's profit figure is well ahead of the previous year's figure.

IBM's profits were 18% ahead of last year's figure at $690 million on turnover up 16% at $4 59 million. Both figures are all time records for the company, and were boosted by the large number of systems purchased outright. IBM pricing policy has encouraged purchase over lease for the past 15 months.

The policy has not been seen as a plus point for the company in all quarters. Speaking in Paderborn last week, Heinz Nixdorf, head of Nixdorf Computer, commented that the policy was folly, and said, IBM was only doing it in a desperate effort to preserve its profit margins. Rental and service income fell slightly from the figure for the second quarter.

NCR reported profits up 33% at £33.3 million on turnover up 6.1% at $604.2 million. The big boost in profitability lends weight to the US stock analysts who have spoken increasingly favourably of NCR's medium term prospects. However, the company reports that good US results were somewhat offset by lower than expected orders in some foreign markets.

Ray Macdonald, chairman and chief executive at Burroughs believes his company's performance demonstrates that the industry has not been hurt as many predicted it would, by substantial price cutting at IBM.

Burrough's profits in the quarter to September 30 were up 16% on the same quarter last year at $43.2 million on turnover up 11% at $490.3 million. Incoming orders are said to be up 14% for the second quarter running.

At Control Data, profits of $6.1 million on the company's computer business were 13% up, as was turnover, at $372 million. Sales to minicomputer and small systems manufacturers were significantly higher, and the company's data services division reported turnover 21% up on the same period last year.

IBM puts squeeze on DOS users

WITH the 3030 series taking shape, IBM is beginning to whittle away the operating systems support for its less adventurous users. The DOS and DOS/VS operating systems are not supported on the 3032 and 3033 and, IBM admits, their support on the 3031 is intended only as a "migration aid".

The company expects users to want to migrate to OS, because of its "greater benefits" and adds that moving out of DOS will be "in the users' interest."

This is the first concrete example of IBM's clear intention to push its users eventually towards its new standard operating system; MVS. This movement is being encouraged by a heavy MVS bias in new software releases.

It is argued that the 3030s are aimed at upgrades from the middle and upper end of the 370 scale, where DOS users are comparatively rare. However, independently compiled statistics show this view to be over-optimistic, particularly in Europe.

The European DOS/VS community on 145s and 148s, 155/8s and 165/8s, at which the new machines are aimed, is still quite sizeable, amounting, in the case of the 145s and 148s, to over 40%.

The two main items, a Cobol compiler and support for the Infos database management system are now understood to be imminent in the US. Data General in the UK could not confirm this.

An Eclipse-based extension to the packaged Commercial Systems (CS) configuration is also expected. At present this series consists of three models of the CS/40, all based on the Nova.

Either of these announcements could be linked with reports of a forthcoming powerful Eclipse processor, the Model 500, which will compete with Digital Equipment's PDP-11/70 (CW, August 25). Such a processor, equipped with AOS, Cobol and Infos, would be a formidable advance by DG in the commercial market.

More commercial jobs

MORE commercial applications are to be added to Data General's line by using both the hardware and software capabilities of the Eclipse series.

Provision for commercial users under the Advanced Operating System has long been expected (CW, November 25, 1976), but a deadline for such software has never been given.

Mainframe challenges

AN AS/7 plug-compatible CPU is under development for Itel at Hitachi in Japan to compete with IBM's 3033. Last week Itel announced Hitachi's AS/6 alternative to the 3032 (CW, October 13).

Meanwhile at Amdahl price cuts are on the way to keep the 470V/5 and V/6 competitive following the IBM launch. Amdahl is also considering a V/4 processor to compete with the 3031 and 148.

Two large-scale Criterion 8500 systems will be announced by NCR in a few weeks, and Univac will announce a four-processor 1100/80 and two-processor 90/80 at about the same time.

Nat West orders Scandata

TWO Cummins 5400 systems and a Scandata 2250 OCR system have been ordered from Scandata by the National Westminster Bank, at a cost of about £550,000. The first Cummins system went live in July at the Nat West Computer Centre, in the City, and the second, together with the Scandata 2250/1 system, is to be installed in the bank's new premises in Leman Street, London, when it is completed.

Documents of varying sizes and thicknesses, with pre-printed, line printed and/or post encoded data on them can be handled by the 5400 system. Nat West is using its current installation for processing collection account credits, and preparing data in a form compatible with its mainframe computers.

Incoterm gives Honeywell new lines

AFTER its abortive attempt to merge with Data General last year, Incoterm has found a partner in Honeywell. The terminal systems manufacturer which is based in Wellesley, Mass, is to be acquired by Honeywell under a complex share-swap formula which values the company at just less than last year's turnover of $39.8 million.

Incoterm's profits in the year to February 1977 were $2.5 million.

The company makes terminal systems which have been widely used by airlines for their reservation systems: it also markets a comprehensive range of banking terminal systems including automatic tellers. Apart from a few specialised markets, banking terminals and airline systems are new departures for Honeywell.

The acquisition, which is expected to be studied by the US Federal Trade Commission or the Anti-trust division of the Justice Department, raises interesting questions in France where Incoterm products are built under long term licence by Transac. Transac is a subsidiary of CGE and CGE is one of the largest minority shareholders in CII-Honeywell Bull.

At present, no rapprochement between Transac and CII-HB is planned because the latter is trying to build up its French peri-informatic manufacturing capability to preserve employment at its Belfort factory.

Cash dispensing equipment from Transac is incorporated into Incoterm products, and the proposed acquisition would give CII-HB the means to make a more concerted effort in the European banking market: in most other European countries Incoterm has distributors, and Transac handles its business in West Germany.

INTERNATIONAL BROKERAGE & LEASING

have opened offices in the UK

- IBL offer short-term leases on all IBM Equipment including 3031s and 3032s.
- IBL are also brokers in second-user equipment
- IBL specialise in 145s — shown by benchmarks to outperform 138s at a lower cost.
- IBL currently have available for early delivery 3340s (all models) for sale or lease at attractive rates.

If you are changing any IBM equipment you should talk to us.

Call John Henderson Tel: 01-890 7158 Telex: 8951179

Unit 4B, Unitair Centre
Great South West Road
Feltham, Middlesex
TW14 8NT

ATLANTIC

LOW-COST FLEXLEASES AVAILABLE ON:
3145, H02, Ext. FI. Pl. 3215, 3047
3138,100, 4655, 8075, 3046
3145,102, 6982, 8810, 3215, 3047

All available January 1978

Atlantic Computer Leasing Ltd
27 Chancery Lane, London WC2
Tel: 01-405 6644 Telex 268 444

SCOPE - 2903
Transaction Processing for ICL 2903/2904

SCOPE-2903 enables the first-time user to develop on-line applications quickly and safely.

SCOPE-2903 provides security and recovery, file handling, system start-up, broadcasts, screen format utilities, access restriction, error analysis, testing aids, usage stastistics, operator training, etc.

The user provides application modules.

SCOPE-2903 can be used to convert DRIVER systems written in PLAN or COBOL.

CP can also provide a complete system development service or turnkey operation.

For further details or a demonstration contact Mike Proctor.

C.P. COMPUTER SUPPORT SERVICES
86 College Road, Birmingham, B44 8DA
021-366 9673

Printed in Great Britain by O.B. Limited, Sheepen Place, Colchester, COI 3LJ, and published by IPC Electrical-Electronic Press Ltd., Dorset House, Stamford Street, London, SE1 9LU.

Briefing

Tesco leans towards IBM

A MOVE towards IBM mainframes and point-of-sale systems by the Tesco supermarket chain is believed to be part of the group's long-term computer strategy. Tesco currently has three ICL 1904S and one ICL 2903 at its Waltham Cross, Herts centre.

A Press conference to announce significant computer developments was cancelled by Tesco last Monday and the company refuses to comment on its plans. But it is known that group has been evaluating the IBM PoS systems which could provide a total IBM distributed system in conjunction with new mainframes.

Dispute settled

THREATENED industrial action by ICL customer engineers over a job evaluation dispute (CW, October 20) has been averted following a new offer from the company. A spokesman for ASTMS, which represents the engineers, said: "Agreement has been reached on job evaluation, an increase in salary from June 2 within Government Stage 2, and a self-financing productivity scheme from August 1, 1977 to September 20, 1978."

Mini launch

THE 16-bit Data General Nova compatible minicomputer developed by the Swiss firm, SEN Electronique of Geneva, has been officially launched as the Helvet-1. Reported exclusively earlier this year (CW, May 12), the Helvet-1 is also functionally compatible with the DCC-16 series originally manufactured by Digital Computer Controls before it was taken over by Data General. The Helvet-1 is being sold in the UK by SEN Electronics Ltd of Chertsey, Surrey.

Centre switch-on

THE £10 million University of Manchester Regional Computing Centre went officially into full swing last week, when the second joint ICL CDC system was switched on by Dr Henry Chilvers, chairman of the Computer Board. Students at over 30 UK universities are connected to two CDC 7600s at the centre through either an ICL 1904S or an ICL 1906A.

Now chairman

JOHN LOBB has taken over as chairman of the company's board of directors. He joined the Modcomp board in June and was made chairman of its executive committee in August. He took over as Modcomp board chairman on October 3 following his retirement as chairman of Northern Telecom Inc., US subsidiary of the Canadian telecommunications manufacturer.

£1.1m Aristocrat

SALES of Burroughs' latest L99-150 visible record computer, called the Aristocrat, have already topped £1.1 million. More than 90 units have been sold.

Polaris system gets Sunbeam car out in record time

By Chris Youett

A COMPUTER system that was originally developed for the Polaris missile programme was one of the two major factors in Chrysler getting its new Sunbeam saloon car out in a record-breaking 18 months.

The other was a system to cut the wooden blocks accurately in preparation for die-making. This alone, according to Chrysler spokesman Jerry Eulson, "knocked six months off the development programme."

The engineers at Chrysler's Whitley, Coventry development centre linked up with the Mark III network in Cleveland, Ohio, via a telephone line to the Astra system that was originally developed by the US Navy to speed development of the Polaris missile.

Astra is a critical path planning system, which enables the engineers to see at a glance where hold-ups could occur, how much work could be done before having to halt, where extra work could be done despite delays and how it could best be kept on schedule.

Astra also allowed Chrysler to incorporate modifications and design changes.

The second system involved Chrysler in sending full-size drawings by air to its triple Cyber 73 installation at its Highland Park, Detroit headquarters. The installation has over 2,000 Mbytes of online disc storage alone.

According to Graham Sykes, the Whitley plant's manager of technical computing, the plans were digitised and, using the Concept language, the drawings were "cleaned up" with an object tape for a numerically controlled machine being produced.

Concept is a high level language which Chrysler developed to give interactive design facilities to designers and draughtsmen.

The tape was run on an NC machine to produce wooden templates, or blocks. These were then assembled into the shape of the car, known in the trade as a "stack," and then flown back to Coventry.

The stack was then used in conjunction with the sinking of dies that would be used for pressing out the car's body panels.

Royal start

Prince Albert of the Belgians presses the golden button on a terminal attached to the Swift network to transmit fraternal greetings to all the 430 banks attached to the network around the world. The inauguration ceremony took place at the Cercle Royal Gaulois in Brussels last week. Swift opens — Page 13.

ICL first with DB processor

THE first database processor to be offered by a mainframe manufacturer is being demonstrated to customers by ICL, and is likely to be officially introduced within about a year.

Called Cafs, Content-Addressable File Store, it consists of an array of parallel processors linked to a disc subsystem and runs as a back-end to a mainframe. It is designed to take over the task of database management.

The first two Cafs are due to be delivered to a UK customer early next year for evaluation.

The key difference between Cafs and most database systems is that the hardware searches the file by content rather than address.

Cafs could make obsolete database software systems like Cullinane's IDMS, used on ICL 1900 and 2900 machines, and IBM's IMS, used on System 370.

Although Cafs has been under development for four to five years, little had been heard of it until it was demonstrated earlier this month to ICL users in Australia via a satellite link to Stevenage.

The Cafs is linked as a back-end processor to an ICL 1903A. For the demonstration, a database of 200,000 listings from the Bedfordshire telephone directory were used. Terminal inquiries giving just a small part of any name, address or locality gave a display of possible names.

The processors in the Cafs system each receive the required information to be searched for from the mainframe, and each searches a different sector of the disc file for possible matches. The data is then formatted for display by the mainframe.

The concept of content-addressing in software database systems is not new, but a Cafs system is much cheaper to implement than a software database.

The use of database processors is understood to be a key element in the IBM E series, which is likely to replace the 370 series during the 1980s.

80 sacked over expenses

ABOUT 80 workers at ICL's West Gorton plant, Manchester, have received dismissal notices over alleged irregularities in their obtaining a "significant sum," thought to be about £18,000, through expense claims.

Police have asked for documents mainly involving workers handling the final assembly stages of large systems such as ICL 2980s and 2970s on customer sites.

"A detailed investigation by ICL's external auditors disclosed evidence of serious apparent irregularities in the obtaining of money on expense claims lodged by some employees at our West Gorton factory," said an ICL spokesman. "We invited the individuals concerned to interviews at the factory. Where there have been no satisfactory explanations we have taken disciplinary action

DEC announces 32-bit mini

AS expected (CW, May 5) Digital Equipment has introduced a 32-bit mini. Called VAX-11/780, it comes with a new operating system named OS VAX/VMS and will support all PDP-11 peripherals as well as being able to run PDP-11 programs.

A minimum configuration, that includes 128K bytes of memory and two 14 Mbyte disc drives plus OS VAX/VMS, will cost just under £100,000. DEC expects a typical system to be in the £200,000 range.

Volume deliveries will begin in mid-1978 although first shipments could start earlier.

Announcing Microsystems 78

Computer Weekly, in conjunction with the journal Microprocessors and six other IPC technical publications, is to organise a three-day event next February called Microsystems 78.

Seminars on the first two days will examine the industrial and commercial impact of the micro, and the third day will be devoted to personal computing. There will be an associated exhibition.

Microsystems 78 will be held from February 6 to 10 at the West Centro Hotel, London.

If you are interested in attending the event on one or all of the days, or you wish to participate as an exhibitor or by presenting a paper, contact Chris Hipwell, Room 125, Dorset House, Stamford Street, London SE1 9LU, for further details.

Computer Weekly is also organising two seminars which will be of practical benefit to DP management.

CW recruitment seminar page 17
CW/DPMA communications workshop ..... page 2

The best silent partner in business

A Systime mini-computer based business system will give you a very rewarding business partnership. Dependable, easy to operate, and with instant access to information, a Systime system will add immeasurably to your company's efficiency and save hours and hours of expensive time. Systime's great contribution to increased profitability can be proven by our rapidly growing list of clients, featuring all sizes and types of commercial and industrial application.

The wide range of systems we offer covers sales accounting, purchase accounting, stock and production control, payroll and a wide variety of specialised applications, and we specialise in a comprehensive installation service including system design, software and hardware. We'll give you very quick delivery, responsive service and a system which can grow in capacity to keep pace with the success of your business.

SYSTIME
REAL-TIME COMPUTER SYSTEMS

Systime Limited, Concourse Computer Centre, 438 Dewsbury Road, Leeds LS11 7DF Telephone Leeds (0532) 707411

COMPUTER WEEKLY'S INSIDE NEWS

BEBUGGED
Tom Gilb once again raises the ire of a CW reader. Paul Coyle explains why he is a firm believer in strict programming standards and why Gilb leaves him bewitched, bebugged and bewildered. Page 4

ADPISTS UNITE
Chad recently asked for suggestions as to what we should call computer people. Read a few of the suggestions, from computerat to adpist, in Downtime. Page 4

IN THE CLUB
John Kavanagh reports on last week's 2900 Club meeting which had some praise and some questions for ICL. Page 5

SMART MACHINES
Intelligent machines might view the world differently from intelligent people. Professor Donald Michie discusses the implications of computers becoming the intellectual superiors of people in some intellectual tasks. Page 6

ALSO....

Computerview on Industrial relations	2
Focus gets down-to-earth	3
Threat to bubble memory	3
Downtime	4
Michie's Privateview	5
Puzzler	5
Software File	6/7
People in the news	10
Diary dates	10
Letters to the Editor	12
Trouble-shooters for BOS	12
Microprocessor news	14
Hijack warning by Cogar	48

NORTHERN JOBS—PAGES 17-21; APPOINTMENTS — P 17-47

PT7
The other terminal for IBM and ICL mainframes
FERRANTI

COMPEC'77 Industry launch pad

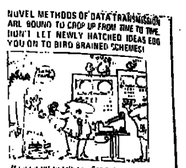
THE importance attached to the peripherals and small systems exhibition Compec by the computer industry is *underlined by the number of companies* which are using this year's show to launch new products or exhibit them for the first time.

Products launches are planned by **Newbury Laboratories**, with new versions of the 7000 series of display terminals; **Trivector Systems**, with the System 80 microcomputer based on the Zilog Z-80; **Delta Data Systems**, with a new text editing terminal; **Diablo**, with two printer terminals; and **Computer Aided Systems (Sales)** with a new UK designed and built *minicomputer*.

Compec will also see the UK and in some cases European launch of products as varied as cassette recorders from **Philips**; Teletype-compatible display terminals from **Terminal Display Systems**; the SE1000 printer and plotter from **EMI**; the Naked Mini-4 minicomputers from **Computer Automation**; and intelligent data capture terminals from **Olivetti**.

After last year's success Compec returns to the Wembley Conference Centre, North London, on November 8-10. For the first time the UK show will be organised by IPC, publisher of Computer Weekly sponsored by the paper. Compec Europe has already been successful in Brussels this year under the same sponsorship.

Over the next two weeks Computer Weekly will be running a competition for people who intend to visit the exhibition, and in the November 3 edition readers will get a comprehensive preview of the show.



If you want to talk to a Computer – talk to us first
Ring 01-421 0626 or
Telex 923 914 (Robots G).
MODULAR TECHNOLOGY
P.O.Box 117, Watford, Herts. WD1 4PD

NEWS IN BRIEF

White House privacy check

INTERNATIONAL data flow and the protection of personal information are now being dealt with at White House level in the US. All government departments have been asked to tell the White House of their plans to implement the Privacy Act, *and a top member of the* National Security Council has been given the job of finding out how US interests might be affected by trans-border data flow and by legislation controlling it.

Club in the west

THE first meeting of the West Country Personal Computing Club is to be held on October 28, at the National Union of Farmers Club in Truro. The club has been running for about two months. Aiming at the large number of small business users in the area, as well as the "personal" user, the club plans to become a focal point for advice and education in computing, and also hopes to set up a program library.

Railway network

MESSAGE switching and time division multiplexer systems valued at over £500,000 have been ordered from CASE by British Rail for its National Teleprinter network. The equipment will be located at BR's Communications *Data Control Centre at Ma*rylebone, where it will operate 367 line connections supporting 420 teleprinters.

SyFa for Tesco

A SyFa minicomputer system from Computer Automation, worth £45,000 has been bought by the Tesco group for stock control and accounting at its House 'n' Ware warehouse at Milton Keynes. The system installed comprises a 64K CPU, two 10 Megabyte disc stores, three VDUs and two printers.

Big profits chalked up by DP firms

RECORD third quarter profits have been announced by IBM, Burroughs and NCR, and *Control Data's profit figure is well* ahead of the previous year's figure.

IBM's profits were 18% ahead of last year's figure at $690 million on turnover up 10% at $4 59 million. Both figures are all time records for the company, and were boosted by the large number of systems purchased outright. IBM pricing policy has encouraged purchase over lease for the past 15 months.

The policy has not been seen as a plus point for the company in all quarters. Speaking in Paderborn last week, Heinz Nixdorf, head of Nixdorf Computer, commented that the policy was folly, and said, IBM was only doing it in a desperate effort to preserve its profit margins. Rental and service income fell slightly from the figure for the second quarter.

NCR reported profits up 33% at £33.3 million on turnover up 6.1% at $604.2 million. The big boost in profitability lends weight to the US stock analysts who have spoken increasingly favourably of NCR's medium term prospects. However, the company reports that good US results were somewhat offset by lower than expected orders in *some foreign markets.*

Ray Macdonald, chairman and chief executive at Burroughs believes his company's performance demonstrates that the industry has not been hurt as many predicted it would, by substantial price cutting at IBM.

Burrough's profits in the quarter to September 30 were up 16% on the same quarter last year at $43.2 million on turnover up 11% at $490.3 million. Incoming orders are said to be up 14% for the second quarter running.

At Control Data, profits of $6.1 million on the company's computer business were 13% up, as was turnover, at $372 million. Sales to minicomputer and small systems manufacturers were significantly higher, and the company's data services division reported turnover 21% up on the same period last year.

IBM puts squeeze on DOS users

WITH the 3030 series taking shape, IBM is beginning to whittle away the operating systems support for its less adventurous users. The DOS and DOS/VS operating systems are not supported on the 3032 and 3033 and, IBM admits, their support on the 3031 is intended only as a "migration aid".

The company expects users to *want to migrate to OS*, because of its "greater benefits" and adds that moving out of DOS will be "in the users' interest."

This is the first concrete example of IBM's clear intention to push its users eventually towards its new standard operating system; MVS. This movement is being encouraged by a heavy MVS bias in new software releases.

It is argued that the 3030s are aimed at upgrades from the middle and upper end of the 370 scale, where DOS users are comparatively rare. However, independently compiled statistics show this view to be over-optimistic, particularly in Europe.

The European DOS/VS community on 145s and 148s, 155/8s and 165/8s, at which the new machines are aimed, is still quite sizeable, amounting, in the case of the 145s and 148s, to over 40%.

More commercial jobs

MORE commercial applications are to be added to Data General's line by using both the hardware and software capabilities of the Eclipse series.

Provision for commercial users under the Advanced Operating System has long been expected (CW, November 25, 1976), but a deadline for such software has never been given.

The two main items, a Cobol compiler and support for the Infos database management system are now understood to be imminent in the US. Data General in the UK could not confirm this.

An Eclipse-based extension to the packaged Commercial Systems (CS) configuration is also expected. At present this series consists of three models of the CS/40, all based on the Nova.

Either of these announcements could be linked with reports of a forthcoming powerful Eclipse processor, the Model 500, which will compete with Digital Equipment's PDP-11/70 (CW, August 25). Such a processor, equipped with AOS, Cobol and Infos, would be a formidable advance by DG in the commercial market.

Mainframe challenges

AN AS/7 plug-compatible CPU is under development for Itel at Hitachi in Japan to compete with IBM's 3033. Last week Itel announced Hitachi's AS/6 alternative to the 3032 (CW, October 13).

Meanwhile at Amdahl price cuts are on the way to keep the 470V/5 and V/6 competitive following the IBM launch. Amdahl is also considering a V/4 processor to compete with the 3031 and 148.

Two large-scale Criterion 8500 systems will be announced by NCR in a few weeks, and Univac will announce a four-processor 1100/80 and two-processor 90/80 at about the same time.

Nat West orders Scandata

TWO Cummins 5400 systems and a Scandata 2250 OCR system have been ordered from Scandata by the National Wes*tminster Bank, at a cost of about* £550,000. The first Cummins system went live in July at the Nat West Computer Centre, in the City, and the second, together with the Scandata 2250/1 system, is to be installed in the bank's new premises in Leman Street, London, when it is completed.

Documents of varying sizes and thicknesses, with pre*printed, line printed and/or post* encoded data on them can be handled by the 5400 system. Nat West is using its current installation for processing collection account credits, and preparing data in a form compatible with its mainframe computers.

Incoterm gives Honeywell new lines

AFTER its abortive attempt to merge with Data General last *year, Incoterm has found a* partner in Honeywell. The terminal systems manufacturer which is based in Wellesley, Mass, is to be acquired by Honeywell under a complex share-swap formula which values the company at just less than last year's turnover of $39.8 million.

Incoterm's profits in the year to February 1977 were $2.5 million.

The company makes terminal systems which have been widely used by airlines for their reservation systems: it also markets a comprehensive range of banking terminal systems including automatic tellers. Apart from a few specialised markets, banking terminals and airline systems are new departures for Honeywell.

The acquisition, which is expected to be studied by the US Federal Trade Commission or the Anti-trust division of the Justice Department, raises interesting questions in France where Incoterm products are built under long term licence by Transac. Transac is a subsidiary of CGE and CGE is one of the largest minority shareholders in CII-Honeywell Bull.

At present, no rapprochement between Transac and CII-HB is planned because the latter is trying to build up its French peri-informatic manufacturing capability to preserve employment at its Belfort factory.

Cash dispensing equipment from Transac is incorporated into Incoterm products, and the proposed acquisition would give CII-HB the means to make a more concerted effort in the European banking market: in most other European countries Incoterm has distributors, and Transac handles its business in West Germany.

SCOPE - 2903
Transaction Processing for ICL 2903/2904
SCOPE-2903 enables the first-time user to develop on-line applications quickly and safely.
SCOPE-2903 provides security and recovery, file handling, system start-up, broadcasts, screen format utilities, access restriction, error analysis, testing aids, usage stastistics, operator training, etc.
The user provides application modules.
SCOPE-2903 can be used to convert DRIVER systems written in PLAN or COBOL.
CP can also provide a complete system development service or turnkey operation.
For further details or a demonstration contact Mike Proctor.
C.P. COMPUTER SUPPORT SERVICES
86 College Road, Birmingham, B44 8DA
021-356 9873

INTERNATIONAL BROKERAGE & LEASING
have opened offices in the UK
- IBL offer short-term leases on all IBM Equipment including 3031s and 3032s.
- IBL are also brokers in second-user equipment
- IBL specialise in 145s — shown by benchmarks to outperform 138s at a lower cost.
- IBL currently have available for early delivery 3340s (all models) for sale or lease at attractive rates.

If you are changing any IBM equipment you should talk to us.
Call John Henderson Tel: 01-890 7158
Telex: 8951179
Unit 4B, Unitair Centre
Great South West Road
Feltham, Middlesex
TW14 8NT

ATLANTIC
LOW-COST FLEXLEASES AVAILABLE ON:
3145. HD2, Ext. FI: Pt. 3215, 3047
3138.100, 4655, 8075, 3046
3145.J02, 6982, 8810, 3215, 3047
All available January 1978
Atlantic Computer Leasing Ltd
27 Clifford's Inn Lane, London EC4
Tel: 01-405 5938 Telex 264144

Printed in Great Britain by O.B. Limited, Sheepen Place, Colchester, CO3 3LJ, and published by IPC Electrical-Electronic Press Ltd., Dorset House, Stamford Street, London, SE1 9LU.

PFC Computer Stationery
PFC Business Forms Ltd
Waterfall Lane Trading Estate
Cradley Heath Warley
B64 6PZ 021-559 3381

COMPUTER WEEKLY
Number 573 Thursday, October 27, 1977 Price 18p

Data Preparation
We have the capacity to punch your pack loads, file set-ups or regular work on 80 Column cards
Croydon: Nada Waugh 01-681 2696
Warrington: Ron Myer 0925 53391
Lowndes-Ajax Computer Service
COM Remote Computing
VM/CMS plus

Briefing

Tesco leans towards IBM

A MOVE towards IBM mainframes and point-of-sale systems by the Tesco supermarket chain is believed to be part of the group's long-term *computer strategy.* Tesco currently has three ICL 1904S and one ICL 2903 at its Waltham Cross, Herts centre.

A Press conference to announce significant computer developments was cancelled by Tesco last Monday and the company refuses to comment on its plans. But it is known that group has been evaluating the IBM PoS systems which could provide a total IBM distributed system in conjunction with new mainframes.

Dispute settled

THREATENED industrial action by ICL customer engineers over a job evaluation dispute (CW, October 20) has been averted following a new offer from the company. A spokesman for ASTMS, which represents the engineers, said: "Agreement has been reached with evaluation, an increase in pay from June 2 within Government Stage 2, and a self-financing productivity scheme from August 1, 1977 to September 20, 1978."

Mini launch

THE 16-bit Data General Nova compatible minicomputer developed by the Swiss firm, SEN Electronique of Geneva, has been officially launched as the Helvet-1. Reported exclusively earlier this year (CW, May 12), the Helvet-1 is also functionally compatible with the DCC-16 series originally manufactured by Digital Computer Controls before it was taken over by Data General. The Helvet-1 is being sold in the UK by SEN Electronics Ltd of Chertsey, Surrey.

Centre switch-on

THE £10 million University of Manchester Regional Computing Centre went officially into full swing last week, when the second joint ICL CDC system was switched on by Dr Henry Chilvers, chairman of the Computer Board. Students at over 30 UK universities are connected to two CDC 7600s at the centre through either an ICL 1904S or an ICL 1906A.

New chairman

JOHN LOBB has taken over as chairman of the company's board of directors. He joined the Modcomp board in June and was made chairman of its executive committee in August. He took over as Modcomp board chairman on October 3 following his retirement as chairman of Northern Telecom Inc., US subsidiary of the Canadian telecommunications manufacturer.

£1.1m Aristocrat

SALES of Burroughs' latest B1700 visible record computer, the Aristocrat, have already topped £1.1 million. More than 90 units have been

Polaris system gets Sunbeam car out in record time

By Chris Youett

A COMPUTER system that was originally developed for the Polaris missile programme was one of the two major factors in Chrysler getting its new Sunbeam saloon car out in a record-breaking 18 months.

The other was a system to cut the wooden blocks accurately in preparation for die-making. This alone, according to Chrysler spokesman Jerry Ealson, "knocked six months off the development programme."

The engineers at Chrysler's Whitley, Coventry development centre linked up with the Mark III network in Cleveland, Ohio, via a telephone line to the Astra system that was originally developed by the US Navy to speed development of the Polaris missile.

Astra is a critical path planning system, which enables the engineers to see at a glance where hold-ups could occur, how much work could be done before having to halt, where *extra work could be done* despite delays and how it could best be kept on schedule.

Astra also allowed Chrysler to incorporate modifications and design changes.

The second system involved Chrysler in sending full-size drawings by air to its triple Cyber 73 installation at its Highland Park, Detroit headquarters. The installation has over 2,000 Mbytes of online disc storage alone.

According to Graham Sykes, the Whitley plant's manager of technical computing, the plans were digitised and, using the Concept language, the drawings were "cleaned up" with an object tape for a numerically controlled machine being produced.

Concept is a high level language which Chrysler developed to give interactive design facilities to designers and draughtsmen.

The tape was run on an NC machine to produce wooden templates, or blocks. These were then assembled into the shape of the car, known in the trade as a "stack," and then flown back to Coventry.

The stack was then used in conjunction with the sinking of dies that would be used for pressing out the car's body panels.

Royal start

Prince Albert of the Belgians presses the golden button on a terminal attached to the Swift network to transmit fraternal greetings to all the 430 banks attached to the network around the world. The inauguration ceremony took place at the Circle Royal Gaulois in Brussels last week. Swift opens — Page 13.

ICL first with DB processor

THE first database processor to be offered by a mainframe manufacturer is being demonstrated to customers by ICL, and is likely to be officially introduced within about a year.

Called Cafs, Content-Addressable File Store, it consists of an array of parallel processors linked to a disc subsystem and runs as a back-end to a mainframe. It is designed to take over the task of *database management.*

The first two Cafs are due to be delivered to a UK customer early next year for evaluation.

The key difference between Cafs and most database systems is that the hardware searches the file by content rather than address.

Cafs could make obsolete database software systems like Cullinane's IDMS, used on ICL 1900 and 2900 machines, and IBM's IMS, used on System 370.

Although Cafs has been under development for four to five years, little had been heard of it until it was demonstrated earlier this month to ICL users in Australia via a satellite link to Stevenage.

The Cafs is linked as a back-end processor to an ICL 1903A. For the demonstration, a database of 200,000 listings from the Bedfordshire telephone directory were used. Terminal inquiries giving just a small part of any name, address or locality gave a display of possible names.

The processors in the Cafs system each receive the required information to be searched for from the mainframe, and each *searches a different sector of the* disc file for possible matches. The data is then formatted for display by the mainframe.

The concept of content-addressing in software database systems is not new, but a Cafs system is much cheaper to implement than a software database.

The use of database processors is understood to be a key element in the IBM E series, which is likely to replace the 370 series during the 1980s.

ANNOUNCING Microsystems 78
Computer Weekly, in conjunction with the journal Microprocessors and six other IPC technical publications, is to organise a three-day event next February called Microsystems 78.
Seminars on the first two days will examine the industrial and commercial impact of the micro, and the third day will be devoted to personal computing. There will be an associated exhibition.
Microsystems 78 will be held from February 8 to 10 at the West Centre Hotel, London.
If you are interested in attending the event on one or all of the days, or you wish to participate as an exhibitor or by presenting a paper, contact Chris Higwell, Room 120, Dorset House, Stamford Street, London SE1 9LU, for further details.
Computer Weekly is also organising two seminars which will be of practical benefit to DP management.
CW recruitment seminar page 17
CW/DPMA communications workshop ..... page 2

80 sacked over expenses

ABOUT 80 workers at ICL's West Gorton plant, Manchester, have received dismissal notices over alleged irregularities in their obtaining a "significant sum," thought to be about £18,000, through expense claims.

Police have asked for documents mainly involving workers handling the final assembly stages of large systems such as ICL 2980s and 2970s on customer sites.

"A detailed investigation by ICL's external auditors disclosed evidence of serious apparent irregularities in the obtaining of money on expense claims lodged by some *employees at our West* Gorton factory," said an ICL spokesman. "We invited the individuals concerned to interviews at the factory. Where there have been no satisfactory explanations we have taken disciplinary action.

DEC announces 32-bit mini

AS expected (CW, May 5) Digital Equipment has introduced a 32-bit mini. Called VAX-11/780, it comes with a *new operating system* named OS VAX/VMS and will support all PDP-11 peripherals as well as being able to run PDP-11 programs.

A minimum configuration, that includes 128K bytes of memory and two 14 Mbyte disc drives plus OS VAX/VMS, will cost just under £100,000. DEC *expects a typical system to be in* the £200,000 range.

Volume deliveries will begin in mid-1978 although first shipments could start earlier.

The best silent partner in business
A Systime mini-computer based business system will give you a very rewarding business partnership. Dependable, easy to operate, and with instant access to information, a Systime system will add immeasurably to your company's efficiency and save hours and hours of expensive time. Systime's great contribution to increased profitability can be proven by our rapidly growing list of clients, featuring all sizes and types of commercial and industrial application.
The wide range of systems we offer covers sales accounting, purchase accounting, stock and production control, payroll and a wide variety of specialised applications, and we specialise in a comprehensive installation service including system design, software and hardware. We'll give you very quick delivery, responsive service and a system which can grow in capacity to keep pace with the success of your business.
SYSTIME
REAL-TIME COMPUTER SYSTEMS
Systime Limited, Concourse Computer Centre, 43b Dewsbury Road, Leeds LS11 7DF Telephone Leeds (0532) 707411

COMPUTER WEEKLY'S INSIDE NEWS

BEBUGGED
Tom Glib once again raises the ire of a CW reader. Paul Coyle explains why he is a firm believer in strict programming standards and why Glib leaves him bewildered, bebugged and bewildered. Page 4

ADPISTS UNITE
Chad recently asked for suggestions as to what we should call computer people. Here a few of the suggestions received, computerist to exploit, to Zebrinthus. Page 4

IN THE CLUB
John Kavanagh reports on last week's 2900 Club meeting which had some grates and some questions for ICL. Page 5.

SMART MACHINES
Intelligent machines might view the world differently from intelligent people. Professor Donald Michie discusses the implications of computers becoming the intellectual superiors of people in some intellectual tasks. Page 6

ALSO ...
Computerview on Industrial relations 2
Focus gets down to earth 3
Threat to bubble memory 3
Downtime 4
Michie's Privateview 6
Puzzle 6/7
Software File 9
People in the news 10
Diary dates 10
Letters to the Editor 12
Trouble-shooters for SCS 12
Microprocessor news 14
Block working by Cimtek 16

NORTHERN JOBS—PAGES 17-21; APPOINTMENTS — P 17-47

COMPUTER WEEKLY

Vol. 23 No. 573
Thursday, October 27, 1977

Editor
Malcolm Peltu 01-261 8033

Deputy Editor
Tony Higgins 01-261 8695

Advertisement Manager
John A. Godley 01-261 8359

Class Ad Manager
Mike White 01-261 8028

Publishing Director
Eric Ickinger

IPC Electrical-Electronic Press Ltd, Dorset House, Stamford Street, London, SE1 9LU. Telephone 01-261 8000 Telegrams/Telex 25137 BISPRS G

Branch Offices:
Birmingham 202 Lyndon House, Walsall Road, Birmingham 22B. Telephone 021-356 4838

Manchester: Statham House, Talbot Road, Stretford, Manchester M32. Telephone 061 872 4211

New York: 205 East 42nd Street, New York NY 10017. Telephone (212) 867 2080. Telex 421710

Published weekly on Thursday. Registered at the Post Office as a newspaper. Price per copy 18p. © IPC Business Press Ltd 1977

Members of Computer Weekly staff may be contacted directly on the extensions listed below. Other departments in Dorset House may be obtained by dialling (01) 261 8000.

EDITORIAL
Keith Jones 261 8344
Tim Palmer 261 8031
John Kavanagh 261 8025
Stephen Bell 261 8303
Martin Banks 261 8806
Robin Webster 261 8170
Bernard Allen 261 8035
Mike Marples 261 8042
Don Mitchell 261 8413
Darshi Rampal 261 8543
Chris Yousst 261 8042
Nancy Pocock 261 8543

ADVERTISING
Display
Stephen Measures 261 8293
Tony Kaminski 261 8022
Lloyd Collins 261 8757
Stuart Moore 261 8109

Manchester
Harry Alken 061-872 4211

Birmingham
Ken Parrot 021-356 4838

Classified
Steven Bass 261 8174
Derek Blakemore 261 8458
Mark Williams 261 8019
John Graham 261 8097
Anne Wilson 261 8098

Manchester
Owen Kelly 061-872 4211

Birmingham
Allan Esott 021-356 4838

Production
David Abbey 261 8016
David Malead 261 8578

Computer Weekly is sent free of charge to the following categories in the UK and Eire only.
Company directors
Company secretaries
Management services executives
Civil servants responsible for computing
Management/computer consultants
Lecturers and teachers
DP Manager/supervisors
Systems analysts/O&M officers
Programmers
Operators
Computer salesmen
Field engineers

Circulation: 78,665 with the highest fully requested circulation in the UK. International Edition (10 issues a year) Circulation 95,219 (UK 76,081 Int 19,138)

ISSN 0010-4787

COMPUTERVIEW

Meeting the industrial relations challenge

AT last the storm clouds surrounding the British economy have shown signs of letting through a glint of sunlight. But over the next few months there will be a number of industrial relations tangles still to be unravelled, with computers and computer staff likely to play a crucial role in some of the most knotty problems.

Except for the computer manufacturing industry, the computer community has managed, over the last 15 years, to emerge, grow and prosper in a sufficiently dynamic and expanding environment, that it has not yet had to face up to some of the industrial relations challenges that are intrinsic to the working life in other fields.

Two elements are now bringing the computer world into the mainstream of industrial relations life — the effects of the first two stages of the current government pay policies which have closed differentials between manual and white collar workers; and the growing realisation by unions of the power of the computer as a bargaining weapon.

The action by assistant air traffic controllers at West Drayton has been focused around the use of its computer system and the Society of Civil and Public Servants has publicly indicated that government computer installations would be high on its priority list if it decides to take industrial action in its current round of negotiations (CW, October 20).

Whatever the outcome of these particular disputes, these actions and others that will follow, could have one significant side effect: raising the public consciousness of the importance of computers and forcing politicians to realise that computers are now a vital national resource which needs to be integrated fully into national policies.

In this type of user action, computers are not central to the particular industrial relations problem but are being used as a bargaining tool in a wider dispute.

Industrial relations within the computer community itself poses some novel issues.

The hardware manufacturing arm of the computer community is in essentially the same position as other manufacturing industries. But for the rest — the service industry, the programmers, operators, analysts and DP managers — industrial relations is still a relatively virgin territory, with many dissimilarities from the rest of the nation's economic scene.

For a start, there is a severe shortage of staff and not rising unemployment. Just look at all the jobs in this week's issue (pages 17 to 47).

The computer community has also tended to be a nomadic one. There are often great differences between the general rates for a job by the standards of other computer professionals with the job rates being paid within user organisations for equivalent staff levels.

This can lead to anomalies between the pay of DP staff and the rest of the organisation; or it can mean that the DP staff fall into line with the users' rates and get out of step with the rest of the computer industry.

The computer community is still relatively young, prosperous and ill-organised. Unions like ASTMS and APEX, which aim to represent computer staff, face the same problems as the BCS in carving out a separate niche for the computer community, as many computer staff will become members of user unions, such as the SPCS or National Union of Bank Employees.

There has, therefore, been little co-ordinated exchange of industrial relations experience, say on the issue of operators' shift allowances (see Op Spot, page 11).

But there are signs that, as wage differentials and living standards have been eroded, computer staff are ceasing to see themselves as a breed apart.

All this places yet another source of pressure on the DP manager, who will have to cope with some tricky industrial relations problems in addition to all the other day-to-day pressures.

It is a challenge, however, that must not be shirked by management or staff. There will be no clear-cut solutions, but a lot of bargaining and learning on the road to the resolving of the paradox in which the DP community must realise its unity as a technological and economic force but whose aim should be to lose its identity within the user organisations that it ultimately serves.

Ten years ago...

- COMPUTER WEEKLY OCTOBER 26, 1967

AT Sicob CII exhibited, for the first time, its 10010 high-power computer, but French "informatique" firms were hard to find among the 500 exhibitors . . . IBM's trading figures for the first nine months showed gross income up by $687 million to $3,749 million compared with 1966, while Burroughs' earnings were up 20% on those for the corresponding period of 1966. . . Peking Radio announced the "successful production of an advanced transistorised computer" by the Science Academy of the People's Republic of China . . . The French retail store chain, Berthier-Saveco, formed a computer-oriented subsidiary, called Ordinastral, to work out horoscopes. . . "Instant translation" from Vietnamese to English was provided on an RCA Spectra 70/45 system intended for use by the US army

FOCUS

on a down-to-earth approach to practical computing

VISITORS to the International Business Show which ended last week could well have been tempted to stray. An international mining conference and exhibition was being held in the adjacent halls at the new Birmingham National Exhibition Centre.

Apart from the fascination of equipment, the length of several technology corridors, there were probably more computing applications in action than next door.

Among the assorted office furniture displays and copying machines, the IBS show was, in contrast, notably free from such computing diversions. No doubt if a survey had been attempted, the results would have given coffee machine vendors a clear head start over computing systems.

The contrast between business and industry was much in evidence. The mining complex was very much involved in data transmissions, computerised control systems, remote controlled automation sensors and transducers.

Meanwhile any transducing at the IBS was limited to the collective gathering of showstand girls and competitions.

Visiting DPMs are obviously expected to spend their time avidly completing entry forms rather than evaluating between computer equipment. Providing one could estimate the time it takes to clean the windows of Buckingham Palace, the weight of a Japanese motor bike (plus desk), pick a "Miss Office Style" and complete a jig-saw puzzle, visitors could muster an assortment of prizes including holidays, photocopying machines plus a car and a motor bike.

Just how many entered the car contest purely to accommodate the massed distribution of sales literature could well have been the subject of a further competition.

This fringe theme — all too typical of such sessions — was possibly deliberate, the organisers hoping to compensate for, what seemed to me, the sparseness of both computer exhibits and visitors. Although many large computing organisations had obviously decided to give the show the cold shoulder, ICL tried to redeem the situation by constructing an elaborate citadel which, in typical computer methodology, was difficult to gain access to or subsequently leave.

In the mining halls next door, all was very much down to, not to mention below, earth. Systems were designed to serve users, management information being regarded almost as a fringe benefit. Whether the users were pit face miners or surface shunters, computing technology was present to assist them, not their bosses.

Measures which could improve safety factors were much in demand, a four second signal warning application being considered more beneficial than a four-week production turnover schedule.

It does seem that the engineers have got their priorities right.

For the rest of us, DP is all too often a means to an information end, the end user being normally the company directors or management.

Our industry is far too occupied with the State of the Art. If the current exhibitions are any guide, the Art is in a pretty poor state. There appears to be an over-preponderance of professors on the DP scene. It is time, perhaps, to return to the basics. To borrow the DPMA slogan, a "practical" dose of computing could be good for us all.

CW/DPMA workshop on improving DP/user communications

Date. December 1
Venue. Holiday Inn, George St, London W1
Price £45 plus VAT (£40 plus VAT for DPMA members) including lunch and refreshments.

COMPUTER WEEKLY in conjunction with the Data Processing Management Association is organising a workshop on December 1 aimed at improving the skills of DP management in communicating with end users.

The workshop will be given by Nigel Laurie, who has more than 10 years' experience in the communications and computer fields. He is currently writing a series of articles for Computer Weekly on DP/user communications, which will form the basis of the workshop (see page 15).

Topics to be covered during the workshop include the management of user communications; aids to better communication (joint task forces, handbooks, HELP routines, annual user reports, etc); and practical guidelines to good user communications.

The workshop is designed to provide the participants with practical information that can be effectively implemented and will include small in-depth working groups.

Numbers are limited to ensure that all delegates are able to participate fully in the day's work, but if there is sufficient demand, further workshops will be held.

In order to ensure that the workshop is tailored to DP Management's real needs, the DPMA is currently conducting a survey of its members on DP/user communications. Survey forms can be obtained from the DPMA, 27a York Road, Maidenhead, Berkshire SL6 1SQ. Tel: 0628 29979.

If you would like to attend the workshop, please complete the form below.

I wish to order ..... ticket(s) at £45 plus VAT for the CW/DPMA workshop to be held at the Holiday Inn on December 1.

DPMA members can apply for reduced rate tickets via the form that is being sent to all DPMA members.

Name ....

Job function ....

Address ....

....

....

Telephone number ....

If you are interested in attending any future workshop because the December 1 meeting is full or is inconvenient, tick here ☐

Return this coupon to: Computer Weekly/DPMA Workshop, IPC Business and Industrial Training, Throwley Way, Sutton, Surrey SM1 4QQ.

KNIGHT PROGRAMMING SUPPORT

THE ORIGINAL KNIGHT CONTRACT PROGRAMMING TEAM

Successful Software Support Specialists since 1970 in the UK and abroad

27 NOEL STREET, LONDON, W.1. 01-437 2164

BRITISH EQUIPMENT
PAPER TAPE & 80 COLUMN CARD PUNCHES & VERIFIERS
PRINTING PUNCHES, CARD SORTERS INTERPRETERS
Country-wide service organisation
Purchase, rental or leasing terms
16a Limes Road, Croydon
Telephone: 01-689 6837

RAIR TERMINALS
Purchase, Lease or Rent
HYTERM
45 c.p.s. keyboard text printer
* Microprocessor controlled
* Graphics Capability
* Variable character and line spacing
* Form feed horizontal, vertical and "absolute" tabbing ...
Post Office approved ...

Threat to bubble memory launched

From Keith Jones in Munich

A CHEAPER alternative to bubble memory is now available from BASF in the form of a domain tip memory module, the DOT 48K. Word processing and microprocessor systems are seen as two big application areas.

The 48K bit DOT 48K has a lower capacity than the latest bubble memory chips and a much longer average access time, 61.5 milliseconds. But at a maximum cost of $20 per module, or 40 millicents per bit, it is considerably cheaper than bubble memory for which BASF estimates a cost of 250 millicents/bit.

BASF says that the DOT module can cost as little as $8, or 15 millicents per bit, if ordered in quantity, and OEM contracts are already being negotiated with manufacturers of equipment like portable data collection kit.

The DOT module comes in a flat plastic housing measuring 75 x 75 x 3 millimetres and weighing 35 grams. Inside the housing is a magnetic film holding four 12K bit shift register channels. Each of these takes the form of a flat spiral on the surface of the film.

The four channels are concentric and the operation of the module is 4 bit parallel. Data is fed in/written at the inside of the spirals and fed out/read at the periphery.

Each bit in a channel takes the form of a magnetic domain and the domains are moved round the spiral by a copper conductor lying on top of the film.

The conductor is folded into hundreds of spokes, forming what looks like a flower with hundreds of very thin petals. As the current passes these generate alternating magnetic fields which make the domains jump from one petal to the next.

BASF has been working on domain tip memory technology for several years (CW, October 24, 1974) and co-operated with the US firm, Cambridge Memories, until about a year ago when Cambridge ran into serious financial difficulties (CW, August 19, 1976).

BASF is already supplying sample quantities of its DOT memory to prospective customers and plans to be in full production at its magnetic media plant at Wollstatt, near Strasbourg, by the end of next year.

A second source agreement has been signed with Crouzet, the French electronics firm which already manufactures DOT memories specifically for military and aerospace applications.

Two other important application areas seen by BASF for the DOT 48K are as a buffer in telex machines in place of paper tape and in process control, where the DOT could be used to store control parameters.

Get out of that . . . Joseph Woch, the UK Othello champion makes a decisive move in an Othello game against a Hewlett-Packard 9830 at Aston University. Woch won 50-14 in a game lasting 70 minutes. His verdict: "The computer played better than I expected." The program was written in Basic by Peter Cooley, who teaches programming in the university's mechanical engineering department. While playing, the 9830 recorded the moves and Cooley will use the information to help the machine put up a better fight next time.

UK house scores in Canada

A SMALL UK software house has landed a significant contract to design software for a major Canadian company's minicomputer network. Xoren, of Ealing, beat at least two North American companies which had put in higher bids for the same project.

The gaining of the contract was due largely to two visits to Canada, this summer and last, by managing director John Jarvis, combining a holiday with an effort to drum up business. The competitiveness of Xoren's bid is illustrated by the fact that the price eventually put on the contract was £26,000. Competitors are reported to have bid as high as £128,000.

The network involves Digital Equipment PDP-11s, running under RSX-11M. The identity of the client and the precise application have not been disclosed, but the system monitors alarm points, and the Xoren software will drive VDUs.

The software will initially be developed on Xoren's own PDP-11/40, before transfer to Canada.

Minister praises BCS work for disabled

COMPUTING is ideally suited to the talents of the disabled, as programming is 90 per cent brain work and only 10 per cent physical activity. And once employed the disabled are anxious to give satisfaction to a far greater degree than the able-bodied.

These points were made by Lorraine King, chairman of the British Computer Society's specialist group for the disabled, at a BCS seminar aimed at dispelling fears of employing the disabled.

These long-term benefits, she said, offset early problems such as the need to build ramps, widen doors and possibly modify work routines.

She called on other professional bodies to take the same kind of interest in the disabled that the BCS did.

The BCS' involvement was also praised by John Grant, the Under-Secretary of State at the Department of Employment, with special responsibility for the employment of the disabled.

"I am impressed by the way you have explored this area to the benefit not only of disabled people but also to the benefit of their employers and the whole computing community," he said.

Honeywell profits boost

THIRD quarter figures from Honeywell show a big boost in both turnover and profits compared with the same period last year.

Profit at $36 million (£21 million) was up almost 45% once an extraordinary item is taken out of the 1976 figure, on turnover of $711 million (£404 million), up 14%. The profit figure was reduced by $7.3 million (£4 million) set aside for increases in stock and "a more conservative method of revenue recognition on service contracts."

Honeywell Information Systems accounted for just under half of the company's business, with Honeywell Controls making up the remainder. On the computer side, worldwide rental and service turnover for computers rose 15.5% in the quarter, and Honeywell said that sales revenues were also up.

Your chance to join the board

STUNG by criticism that thousands of public service appointments are in the gift of Ministers and tend to be offered only to their cronies, the Department of Industry has decided to invite members of the public to apply for two £1,000 a year part-time appointments to the Post Office Board.

Users of Post Office services will be preferred, so anybody who is involved in data communication and believes the Post Office is insufficiently responsive to the needs of the computer industry should have a fair chance of being accepted.

Applications have to be in by the end of the month and should be addressed to Mr J. E. M. Beale, assistant secretary, Department of Industry, Waterloo Bridge House, London.

INTERRUPT...

THERE was once a tough, ruggedised military minicomputer which was designed to control a tank. It did clever things like keeping the tank's gun pointing in one direction while the tank was moving in another.

During demonstrations, everything worked perfectly, and the operators became very adept at manipulating the switches on the control panel. The trouble only began when the computer was installed in the tank.

For, after the soldiers had crawled into the tank, heavy army boots first, it was found that the mini no longer had any control switches. They had all been snapped off by the boots.

The moral is: Do not put the boot into considerations of the installation environment and human interface (or interfoot) during systems design.

● Submitted by Peter Williams, of London, who wins the weekly £5

Exciting things happen with Prime Computer

With 24 hour working and 20 tons of rock removed with every shovelful, Taylor Woodrow need their Prime computer to optimise open cast excavation – profitably. If your business has requirements as diverse as structural analysis, vehicle route planning and financial project control, Prime has a computer in its range to suit.

Prime Computer (UK) Limited, The Merton Centre, St Peter's Street, Bedford MK40 2PN and The Coach House, 173 Sheen Lane, London SW14 8NA Telephone Bedford 0234 65121 or London 01-878 4915

PRIME

DOWNTIME by Chad

Finding a name for DPeople

WELL, what do you call a "computer person" (or, as some US journals would have us say, "DPer")? Several readers responded to my invitation to coin a neonym (Downtime, October 13).

Andy Mardo, of Reading, offered (his own words) some suggestions "both quaint and barmy". As most of the practitioners (no, that won't do, either!) in the computer industry that I've met or worked with qualify under one or both counts, I give his list, with his comments:

Electrodatalogist — sounds like someone trying to escape from a bomb shelter;

Datician — would probably prescribe slimming pills;

Systophile — who on earth loves systems, let alone files?

MDPI or **MDPP** — for member of the DP industry or profession.

More seriously, he avers of Compro that "it looks good, it sounds good, and by golly, it's the name of a segment in George III, described elsewhere as the King of Operating Systems."

From M. D. Hutton, director of Jadpu, comes Computerist; Computertechnicien (Computech for short, he says, but the term is already arrogated by the eponymous firm); Informaticien (on the French model), and Informaticist. He adds Computerbug; Computerologist; Computeralist; Compologist; Compy (useful for headlines, that); Compist and Adpist (not as in *news*); Adper and Computerat.

B. G. Jones, of St Davids, Pembrokeshire, suggests rather late in the day that the term Computer could be reserved for people, as "there is in one sense no such thing as a piece of hardware called a *computer*". His list of possibles includes Computant; Informatician; Computician; Computor; Computist; Computerman (oh, dear — no *women?*); *Computect* and Computeer.

Somehow, I don't think the last word has been said on the matter, though I would like to add my own contribution: Logonaut, from logos (word, system, order) and -naut (one who steers a ship, spacecraft or the like). Seems logical.

"I get this recurring fantasy that I'm on top of my job . . ."

Black holography

FOR those readers intrigued by the Isaac Asimov interview on robotics (Futureview, October 13), there is more of this fascinating author to be enjoyed in his latest book, "The Collapsing Universe: The Story of Black Holes".

Published by Hutchinsons (£3.95), *it takes the reader* down to the world of atomic and sub-atomic particles and then up into space and to one of the most extreme states of matter known in the universe — Black Holes.

Black Holes come into existence when matter, in the form of suns, collapse inwards upon itself under the power of gravitation. Once a certain threshold is reached nothing can stop the collapse and the sun becomes superdense. Nothing, not even light, can escape and therefore the sun is now invisible.

Asimov's style in writing *about complex subjects is* remarkable for its simplicity without oversimplification. In this book he continues the pattern and makes some startling suggestions — one of which is that we are now living in a Black Hole. The worry is that he could be right. . .

Labelled for despatch

THE plastic labels which officialdom in all its forms bedecks its minions are a familiar sight. I'm never sure of these badges of authority are there to tell the wearer who he or she is, to tell us who they are, or to let their employers keep a tally on them.

The reason given out for this plastic labelling is, of course, security, but with their bright colours and personal portraits I think it is another branch of the ever-spreading greetings card market.

Among the many variations that one sees hanging on official chests and breasts, those used by IBM have an interesting "built-in obsolescence" feature. Over the picture of the card-holder, IBM states very firmly, "Expires 1980", or, I suppose, whatever other date the company's man-management plan decrees.

THE story that should have hit the headlines. "Naked Journalists at Olivetti press visit". It all happened in Helsinki earlier this month when the terminal and systems company laid on a mass sauna as a prelude to showing off a big banking system. Just a case of taking down to the bare facts.

In his first Mythodology column (CW, August 25), Tom Gilb asserted his belief that there is no systematic proof that structured programming can improve productivity. Paul Coyle, who has many years of practical involvement in programming projects, strongly disagrees with Gilb's attitude. In this article, Coyle gives his own personal view of why his experiences have convinced him of the practical importance of strict programming standards.

Bewitched bebugged and bewildered

'The results are outstanding. We write programs faster, they are operational sooner, they seldom fail drastically and when they do, they are easier to amend'

I AM sure that Tom Gilb will not be offended if I call him an academic. I was once an academic and learned the value of the Scientific Method, which involved the investigation of theory, formulation of hypotheses, experimentation, analysis of results and the ensuing cycle of prediction, experimentation, analysis of results, reformulation of hypotheses and so on.

Very few of us are clever enough to be able to continue a life of academic bliss and have to use such native cunning as we do possess in persuading an employer that he should pay us.

I am employed by a large company with a fair-sized computer installation, 23 programmers and over 3,000 operational programs. Under such circumstances such scientific theory becomes redundant in attempting to adjust to the real world.

Because human beings are notoriously unpredictable, experiments are usually performed first on animals, and one of the reasons for the unpredictable human is that he likes to control his own conditions in his own way. In matters where conformity is desirable to produce results of which no individual would be capable on his own, some set of rules of behaviour is usually developed.

Most people concerned with computing would agree that some form of programming *standards is desirable. Ours are* comprehensive, having evolved over several years, and we do ask programmers to stick to them. It may sound like rules, regulations and restrictions, but it is not as bad as that.

If any individual is unable to solve a problem within the framework of the standards, then one of three things may happen. First, problems may not be being tackled in the best way, so redesigning the solution may be desirable. Second, a previously unsuspected condition may have to be incorporated in the standards, which are not immutable. Third, the problem may genuinely be a "one-off" or may have reached such a stage that to conform would require chaotic changes to the rest of the system. In this case *such patches as are necessary* are applied, well sealed with copious annotation describing why standard procedures could not be used.

Consequently our standards may be described as democratic, and in any democracy there are always individuals who disagree with some of the standards but are prepared to conform in the sake of the whole principle. The consequence of consistently breaking the standards of society is either "corrective treatment", stardom or politics. This recognises that if standards break down through constant abuse, then the society for which those standards were meant to operate will also begin to break down.

If I push the analogy, rightly or wrongly, to apply to programming standards it would seem that continual divergence from the standards would cause an eventual breakdown in the computer system, caused by obscurities, misunderstanding, use of undesirable features, unmaintainability and so on.

Education is a well proven method of ensuring that standards are known and kept, and that individuals are aware of the proper steps to take should they disagree with any of them. Thus we have a comprehensive training and education scheme, and never assume the dictatorial attitude of saying simply, "These are the standards, use them or else!"

The results are astounding. We write new systems faster, they are operational sooner, they seldom fail drastically and when they do, they are easier to amend. I must disappoint Tom Gilb by adding that I am unable to offer a proof of this to the nth decimal place, but then we would be in a sorry state if all subjective statements were dismissed as valueless for want of a few figures.

This is especially true when others, including some of our users, agree in their subjective views.

Incredulous readers who are now thinking that all they have *to do is knock together a few* rules of the "Thou shalt prefix all working storage accumulator fields with WA." format and all will be well, are perfectly right to be incredulous, because there is also a section of our standards which deals with design techniques — and it is in this area that the greatest improvements have taken place.

We use structured programming and design techniques, it's as simple as that. It should not be controversial!

Unfortunately, it is people such as Tom Gilb, who dismisses the advantage of structured programming simply *because* nobody has yet performed detailed measurements, who make the subject controversial. In recent computer press contributions, Tom Gilb has suggested that annotated code offers at least as many advantages as structured programming, and that correct modular design is "better than" structured programming; and no doubt he has done experiments to prove it. But, are not these objections a little too specific to be meaningful?

All that should ever be claimed is that structured programming and other techniques, if taught and applied correctly, can improve the performance of computer systems. The pity is that Gilb has implied that annotated code, modular design, structured programming and other aids are mutually exclusive.

There is absolutely no reason why a program in our installation should not be fully documented, incorporate annotated source code, use dataname*s*, etc according to standards, use our structured design techniques (based on data structure — not to be confused with nebulous terms such as "Function Decomposition") — and even be modularised (separately compiled modules, that is), all at the same time.

Also, if you happen to think it's a good idea, there is no reason why such a program cannot be bebugged. Bebugging — the deliberate insertion of bugs into a program while the time taken to locate them is measured — is not, in my opinion, a new, all-singing, all-dancing technique, but merely an additional aid.

If people could clear their minds of ridiculous quibblings over whether GO TO should be allowed in structured code and regard the process of program design, coding testing and maintenance as one problem, then it should be apparent that we would be failing our employers, our users and, ultimately, ourselves if we did not incorporate all relevant aids into the *normal* sequence of events for producing an operational system.

Having, perhaps, stated the obvious, I believe that not all so-called aids are relevant and I *think bebugging fall into this* class. I'm sure that the vast majority of applications programmers would agree. I work in an open plan office with other programmers in a friendly atmosphere where we write programs which are now on the machine downstairs and if they ever go wrong, we sort them out. All fairly standard stuff, but (as with many users), enhancements, bugs with some of the older programs, education, training, hardware and software upgrades and changes keep us very busy.

Who, under such conditions, could consider approaching a programmer who is working to the usual deadline of "last week", and asking them to solve deliberately planted bugs? There are, of course debugging aids which, used sensibly, can make solvable all but the most obscure bugs, which may require detailed knowledge of other parts of the system or of the software in use. The techniques of solving some bugs are even outlined in our standards. As a result, any bug which cannot be identified within an arbitrary time limit is *likely to require the assistance* of a systems analyst or software programmer anyway. How does that fit in with bebugging theory?

I am sure it will have crossed other people's minds that, with very few changes, bebugging could become an instrument for measuring not the maintainability of a program, but the competence of the programmer to whom the exercise is given. An egoless approach to programming is all very well, but bebugging now offers a means of destroying it entirely!

As a training exercise in the use of core dumps, symbolic debugging and other trace facilities, planted bugs have always been used, but to take a bebugged program to a colleague and give him or her 30 minutes to beat the clock, seems to be a pointless academic exercise.

In conclusion, I would say that arguments about programming techniques are often *needlessly* invented by those wishing to "sell" a new technique, and my special objection is that such techniques are often exploded by the "salesman" into *the answer to* all programming problems, instead of just another aid which could make life a little easier for the rest of us.

ACOUSTIC COUPLERS

Contact
MOORE REED & CO. LTD.
Walworth, Andover, Hants.
Tel: Andover 4155

STOP WASTING MONEY!
MicroSim 8080
The world's most advanced Program development system
ALLEN COMPUTER SERVICES LTD

The alternative to IBM.
Disk drives, tape units, memories, terminals, printers, System 10.
Telex Computer Products UK Ltd.
218 Oxford St, London W1. 01-734 9131
TELEX

John Kavanagh reports on the 2900 Club

VME/B improving rapidly, say users

THE VME/B operating system on the big ICL 2900 mainframes still has problems but is improving rapidly. That was the verdict of users at last week's 2900 Club meeting.

And according to one important user, the BOC bureau subsidiary Datasolve, most of the problems are irritations *rather than major holdups to* work.

One exception to this is the weakness of the communications facilities of the system. Mike Gardner, manager of Datasolve's 2970 centre, said this was his major problem. "The facilities are there and they almost and sometimes do work, but the system can't support enough terminals."

Datasolve's 2970 supports 12 terminals. Gardner thought this figure must be at least doubled and ought to be over 30.

Apart from this major problem there were irritations such as a lack of performance measurement and timing tools and a minor usability problem. "These aren't big problems," said Gardner, "but they could be to a new installation."

Gardner pointed out that between July and September the mean time between software failures had been 10 hours. But the true situation was less gloomy: "If you count genuine software failures the mean time between failures increases to 25 hours.

"The difference between the two figures is accounted for by the fact that VME/B can't cope with minor hardware problems. We expect a lot of these problems to be solved in the next release."

Gardner added that at each break in running the company lost 20 minutes, as it took five minutes to dump the system, five minutes to load again and 10 minutes to re-run previous *work.*

On the "plus" side the breaks had never had any effect on the file store or catalogue.

Gardner was also happy with *ICL's conversion aids, which he* described as extremely good and very reliable. And benchmarks which showed that the 2970 was slightly faster than a Univac *1106* and more cost effective than a big 1900. This meant that the performance was starting to look encouraging.

Datasolve's relatively happy experience of VME/B is partly due to the company's early start in preparing for the 2970.

It started two years before the machine was delivered, with operating staff being trained and given practical experience at ICL's Bracknell centre.

Gardner described this training process as the most significant reason for what he called Datasolve's flying start with VME/B.

Other tips were passed on by Gardner: "You owe it to yourselves to use the best staff you've got on the project. After all, you'll expect the machine to last 10 or 15 years. Make sure you have clear procedure. You need a well disciplined approach. And we found that you get further and faster if you work with ICL rather than against."

Getting a flying start could *save a user £150,000 in the first* six months: "It costs £800,000 to run a 2970. If you start from scratch you start getting full value for money after six months.

"If you're well prepared you can get some value immediately and save around £150,000. We had customers on our machine a *week after it was delivered.*"

Three years on...

IT is almost three years to the day since ICL launched its 2900 *range of mainframes.*

Last week a record number of members — 313 — were at a meeting of the 2900 Club, a body of users, potential users and consultancies which is independent both of ICL and of the ICL Computer Users' Association.

So how is the 2900 getting on after three years? Members *heard that the main bones of* contention, the VME/B and VME/K operating systems, are improving rapidly although the major weakness with both lies in the limited communications facilities yet available.

Varsity man's praise for staff and hardware

***A catalogue of complaints about* the VME/K operating system, offset by praise for ICL staff and hardware, was given at the 2900 Club meeting by Dr Brian Spratt, director of the computing laboratory at Kent University, Canterbury, an early 2960 installation.**

And, like VME/B on the bigger systems, VME/K's biggest failing *was its communications ca*pability. In January the university was running less than eight terminals. The number was now 12 or 13, but Dr Spratt said he would like to be able to run 64 or more. "It's in ICL's own commercial interest," he said.

Other shortcomings last January held up the introduction of a *reasonable user service by six* months, said Dr Spratt.

They included inadequate Fortran and Algol compilers, no file store accounting, non-contiguous printer output, no batch facilities on interactive working, which meant that if a job went into a loop it could not be interrupted, and no macros in job control language, meaning that all job control statements had to be input by the user for each job.

Current shortcomings included the fact that VME/K took too much memory and disc storage; the tendency of the system to *produce a dump rather* than a simple message if a job control statement was wrong; too much patching, which was a step backwards and did not lead to a stable operating system; and the fact that the communications controller could not support asynchronous devices.

ICL solved this last problem by supplying a Teletype concentrator based on a *7502 terminal* with 16 channels. "This was nice, but expensive," said Dr Spratt, emphasising that universities did not have money to throw around these days.

On the plus side the hardware was good and improving, the ICL project team gave enormous help and called regular meetings, although the university felt that the support from the rest of the company was patchy.

Dr Spratt was now looking for better throughput and reliability and "vastly improved usability"; *the system is supposed to be for* real users, not virtual ones". He was also interested in more compatibility between VME/B and VME/K, as he hoped to use the 2980 being installed at Oxford University as back-up.

Dr Spratt's final verdict was, "VME/K's improving, but there's still a long way to go."

Personal accountability is now alive and well

"IT was impossible to get fired at ICL three or four years ago. But now personal accountability is alive and well." So said Bruce Stewart, director of ICL's systems programming division, in a talk at the 2900 Club meeting which painted a picture of a *new, efficient, ICL, with the* lame duck image long dead.

Stewart said that every systems programmer was now an identifiable link in a chain.

Simple changes which had also had great effects on the quality of the end product included assuring that all 2900 development work was actually done on a 2900 computer and writing new software as a part of existing systems rather than writing it in isolation and then trying to integrate it afterwards.

Changes such as these were reflected in the fact that when Stewart joined ICL two years ago it took 45 minutes to run a single user test shot with VME/B. It now took two or three minutes. And the mean time between failures was now up to 16 or 17 hours.

Wanted: experienced workers for France

A FIRM vote of confidence in ICL at the 2900 Club meeting came from a French user. Serge Quelin is company secretary of Méthodes et Informatique, a French bureau specialising in services for insurance companies and department stores.

The bureau got a 1901 in 1971, moved to a 1902 and then a 1904A and has now ordered a 2960 which will be installed in 1979.

Quelin's praise of ICL was based partly on the performance of the 1900s and partly on the way the company operates in France where, with 350 2903s and 120 1900s installed, it is th third biggest supplier by numbe of machines and the sixth l value.

"In France the whole IC team, including managemen takes part in contract ne gotiations," said Quelin. "An unlike its competitors IC shows no obvious aggressio and so negotiations are done the best spirit."

Quelin pointed to an adva tage which his company ha over users in the UK: "A co pany our size has all the adva tages in dealing with a suppl like ICL, which is not domin in the market."

One problem, however, w finding staff trained on I equipment, and this was o reason why Quelin had chos to run the VME/K operati system on the 2960 rather th VME/B, which is more diffic to use.

He added, "UK recruitme companies should look seiou to France, for there are st shortages, especially at ICL installations."

'Answer criticisms' call to ICL

A SAVAGE attack on the fact that ICL did not answer the specific criticisms of the VME/K and VME/B operating systems came from the 2900 Club chairman Stuart Rutherford in closing the meeting.

He said that ICL speakers had not addressed themselves to the subject at all and that this was "quite unacceptable"

Indeed, the main ICL speaker (see this page) talked mainly about the organisation of the systems programming division, and little was said to reply to criticisms apart from promises of a major issue of VME/K in January and of VME/B late next year. How far these go to solving the problems aired by speakers *remains to be seen.*

Tally grows in Europe

The fruits of the spreading Tally tree are there for anyone to take. Better technology and better performance, lower prices and less *maintenance*, a range of printers to match the market needs of the whole continent.

A factory in Austria and sales and service support in 16 countries.

Branches everywhere, you might say.

A range of printers to satisfy all your computer output needs.
Optimised technology at each speed means optimised reliability.
Simplicity of design means inside the clock performance – with no routine maintenance.
Tally printers plug in to almost any mini-computer or data terminal.
Tally service is about as fast – anywhere in Europe.
Tell us your application requirements – we'll tell you which printer will meet it.

TALLY LIMITED
7 Cromwell Road
Reading RG1 8NQ
Berkshire, England
Telephone: (0734) 582141

TALLY GmbH
Offenbacher Str. 17
Krupp-Ring 138
W. Germany
Telephone: (0611) 41701

TALLY Gesmbh
Zehdengasse 17
A-1232 Vienna
Austria
Telephone: (0222) 672647

TALLY ITALIA S.r.l.
Via Clitunno
Milano
Italy
Telephone: (02) 4045545

TALLY S.a.r.l.
10 Rue de Vignerons
78310 Coignes
France
Telephone: (01) 913 5827

Belgium
S.A.T. Electronics S.A.
Brussels
Telephone: (02) 376 2030

Denmark
Datalog
Copenhagen
Telephone: (01) 12 48 03

Finland
Benko Oy
Helsinki
Telephone: (90) 542 007

Greece
Dressler/Rentrisch Graphikchemie S.A.
Athens
Telephone: (01) 322 6607

Holland
Rand Telnet B.V.
Amsterdam
Telephone: (020) 41805

Portugal
Telephone: (19) 7 7557

Scotland
Telephone: (0355) 82 752

Spain
Telephone: (91) 733 5100

Sweden
Telephone: 08 - 24 55 55

In his first Mythodology column (CW, August 25), Tom Gilb asserted his belief that there is no systematic proof that structured programming can improve productivity. Paul

MICHIE'S PRIVATEVIEW

What if the machines become inscrutable...?

I HAVE previously noted the emergence of computer programs able to outperform experts in selected intellectual tasks where the machine approach displays a style quite different from the human's. A small but telling example from chess came to light at the Toronto IFIP in August.

As mentioned in Chesslab, International Masters Berliner and Day were invited to demonstrate their skill against a move-perfect program for a particularly tricky sub-game of chess, the King-Queen-King-Rook ending (CW, October 6).

Except for a few special starting positions the Queen's side has a theoretical win against the Rook's side, and a strong Master can ordinarily be expected to win against any human opposition. Yet Berliner and Day found themselves unable to defeat the machine however many times they tried.

The most upsetting feature, they complained, was their opponent's bizarre and counter-intuitive style, which bore no trace of the simplifying concepts which give shape to human play.

The following issues merit consideration.

Strategies evidently exist which are machine-refutable but not human-refutable. If already in chess, why not in air traffic control, power grid design or military robotics? Should we let even unintelligent machines become that smart? What are the long-term omens for man-machine communication if the partners do not share conceptual structures or any common style of apprehending and analysing problems?

For tasks of middling-to-low complexity, these are not real issues. We have already lived with them for a long time without ill effects. A number cruncher equipped with the last word in variety and efficiency of numerical routines has little in common with the conceptualisations of a human calculating prodigy such as the Edinburgh mathematician Alexander Aitken.

He would have found intercourse with a Cyber 176 concerning factorisation and the extraction of roots almost as mysterious and unsatisfying as Berliner and Day found their experience of the KQKR program.

True, he would have been able to gain an understanding of the numerical algorithms themselves, whereas the chess-masters had nothing to understand, only a four million-position lookup table.

High-speed arithmetic is an intellectual utility which does not demand that we understand or talk to it. The same goes for packages of all sorts which permeate the computing world as convenient "black boxes".

Suppose that a PERT package schedules the job better than a human project director. How much desire does he feel to pry into its detailed workings or to argue with it, so long as it is doing what he wants?

Man-machine understanding, however, acquires the highest importance in certain applications which are now on the move. The relevance is not to "black box" programs but to those for which an "open box" mode is mandatory. The fact that this latter kind are still few is a measure of the extent to which information processing has yet to penetrate into the more complex and responsible levels of human affairs.

"Complex" and "responsible" correspond to two separate reasons why we may demand that a program share its conceptual structures with the human user. The problem area may be so complex that man-machine intellectual partnership is needed for best progress.

An increasing variety of chemistry packages fall into this category. It is of interest that the US Government recently announced the setting up of a National Resource for Computation in Chemistry.

The other reason for "open box" use derives from the responsibility of the task. In air traffic control we do not care how smart the programs get. They can be as superhuman as they like. But we would care if they became inscrutable.

Various medical "expert systems" also come to mind. Without the facility to probe and question the program's reasoning, Stanford's clinical pathologists would ignore the Mycin program, however skilled it may be in bacteriological identification and drug prescription. And they would be quite right.

At Edinburgh we study how to build a common conceptual frame for man and machine. Using chess end-game knowledge we are developing facilities for easy transfer of strategies from man to machine and back.

Such studies need to be amplified in a variety of branches of knowledge so that our culture may be enriched, not eroded, by the advance of the machines. Urgent investigation in the coming decade should be devoted to the "conceptual interface".

A program is not "intelligent" in any useful sense unless it can show a convincing grasp of how the problem looks, not just to a 10 mips device, but to the computationally limited instrument within my skull.

Donald Michie

SOFTWARE FILE

EDITED BY STEPHEN BELL

Facing problems of rapid growth

RAPID expansion in a company's business frequently leads to more complex information requirements and hence more involved DP solutions. A good illustration of this growth at work is provided by container transport company, OCL.

Having already ventured into teleprocessing, the company is now in the course of both extending its telecommunications facilities and transferring its information to database organisation. This progress, as OCL pointed out, is due purely to expansion in volume and immediacy of its business, rather than any qualitative change. The company's single line of business would remain transport of containers, and little could be added to this, said a spokesman.

OCL's main UK container terminal, at Tilbury, is serviced by IBM equipment, which has progressed from a 360/30 in 1967 to a 370/158 at present. The company is currently considering acquiring another 158, and linking the two under MVS — replacing its present DOS/VS environment. With the emergence of the 3030 series, however, one of these machines is being considered as a possible alternative.

Teleprocessing was first mooted in 1971, as a faster method of communicating information about containers to and from regional UK and European offices. Previously, this has been managed on punched tape. Today, there are over 100 IBM 3270 terminals at Leeds, Liverpool, Manchester, Paris, Bremen, Rotterdam and other offices.

TP access is managed through IBM's CICS/VS software. While admitting that there were probably other more efficient rivals, OCL representatives pointed out that most of the progress in the independents had occurred after the TP decision had been made — for example, the new releases of Altergo's Shadow and TSI's Task/Master. At that time, they said, CICS was the most attractive product on the market.

The forthcoming progression to database is a different story. OCL has decided to use Cullinane's IDMS and will probably be the first UK installation to use the database in teleprocessing mode.

The decision to go to an independent for database software emphasises again one of the frequently criticised shortcomings of IBM's own DL/I — its rigidly hierarchical organisation. OCL's need to access information through several different keys meant that a network data organisation was the only answer, without duplicating data items, said project manager Phil Ingram.

The first application to be put on the database is a new container control function. This has been implemented and tested, but is not yet in production usage.

Container control informs the OCL offices of the location and status of the company's containers around the world. This information may be required in several different forms; a depot may, for example, want details of all containers arriving there that day. Alternatively, it may wish to trace containers of a special type, to fulfil an order.

Other information needs include historical details of previous cargoes stored in each container. "Obviously we can't ship food in a container which has been used for chemicals," said OCL.

The company leases several of its containers from other companies, and details of these, their location and the money owing on them must also be maintained. These complex requirements make clear the advantage which will be gained by implementing a network database.

Most of the information is produced regularly in the course of normal business, but ad hoc online inquiry will become an increasingly important facet of the computer system, aided by CICS and IDMS, OCL predicts.

The present CICS-IDMS interface is not as streamlined as might be wished, admitted database administrator Karen Foster. A new release of the interface from Cullinane, is however, imminent. OCL, like most UK installations of IBM IDMS, acquired the database through Scicon.

OCL has also recognised the need for a data dictionary, and is using Arthur Andersen's Lexicon product.

The conversion to MVS is expected to be complete by March, but, prior to this, in January, the company plans to implement VM/370, at least temporarily. With this, the database implementation and the second mainframe, the DP department's load is increasing.

Accordingly, the company is recruiting new DP staff intensively, and hopes eventually to have some 260 personnel.

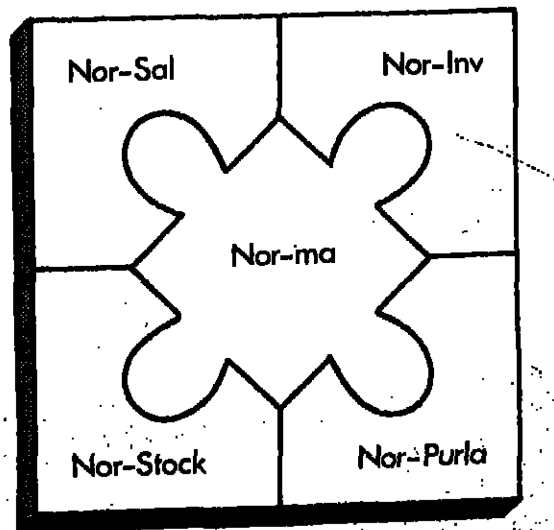
Standards document

SHORTLY following its criticised standard for decision tables (CW, August 4), the British Standards Institution has published a standards document* relating to another technique increasingly used in programming — the program network chart.

The chart expresses the process and data components of a software system and their relationship. Complex charts can be simplified according to well-defined rules. The report summarises these rules and defines standard symbols to represent types of software component and their interconnections.

*BS5476 "Program Network Charts," £2.70, BSI Sales Department, 101 Pentonville Road, London, N1 9ND.

The logical answer
to your accounting problems



Integrated Accounting Packages

Already being used by over 600 major companies Marketed throughout the USA, Canada and Europe

nsc northern software consultants limited

15 Cross Street Manchester M2 1WF Tel: 061-832 9967 Telex No. OHAMCOM MANCHESTER

Graphic Data System refined to aid VLSI designers

ADVANCES in hardware technology can set severe problems for designers who must, in turn, call upon the resources of computer-aided design systems to keep pace with them. Calma, one of the specialists in CAD, has taken specific steps in enhancement of its circuit design aids to cater for the hardware designers' progress into very large scale integration, VLSI, technology.

A primary problem is that of resolution. VLSI circuitry features may be only 0.1 microns wide, while whole circuits could be as much as 1 cm square. This requires a resolution of 1 in 100,000, more than 16-bit plotting co-ordinates can handle. Calma, in its new Graphic Data System II, has accordingly upgraded its 16-bit co-ordinates to 32 bits.

On a large and elaborate circuit, the designer is still faced with the speed and space problems resulting from the handling of a vast amount of data. Aimed at minimising these problems, GDS II has been augmented system to provide faster access to required data than conventional files. Data Compression algorithms help to reduce space.

The system's new display handling software is also claimed to alleviate a bottleneck in the process of interactive design, by passing graphics data to and from the screen more quickly.

A multiprogramming operating system enables up to six displays to be handled simultaneously, while the system is also performing background tasks such as plotting, or putting graphical data on magnetic tape to drive an offline plotter or generator for the photographic matrices used in circuit manufacture.

The design process is controlled by a specialised high level language, devised by Calma, and named GPL II. GPL II commands are adaptable to novices as well as expert users, and provision is also made for "menu-type" selection of routines, says Calma.

The GDS II configuration is based on Data General's S/230 scientific machine which is, in turn, based on the Eclipse processor.

PUZZLER

THERE are several ways to arrange 10 points so that five lines of four-points-in-a-line are formed. And when those five lines are pencilled in, various interesting shapes are outlined — the Magic Pentagram, five-

However, there is only one arrangement which results in two of the points being completely enclosed when the five lines are drawn in (with the Pentagram, no points are enclosed). Can you work it out

save with Westinghouse
use Quikjob
The fast file maintenance and creation facility
call 01-951 1999

How Release 5 stops worries

THE official announcement of Release 5 of IBM's VM/370 operating system has relieved several worries for IBM users. The most significant reassurances given in the announcement, at the latest meeting of Seas, the Share European Association user group, was that VM/370 will be supported on the current models of the 3030 series and, presumably, on future models.

Users have become increasingly apprehensive that IBM was seeking to push the users of its new large machines irrevocably towards MVS (CW, October 20).

The assurance of continuing VM support indicates that, despite heavy promotion of MVS, IBM now sees VM also as a system with a long future.

This appears to represent a change of heart on IBM's part, said a Share representative. The driving force was undoubtedly the increasing popularity of the system. "IBM, like any other business organisation, has adjusted its view in the face of customer enthusiasm."

A number of "system extensions" have been made to VM, as part of Release 5. Perhaps the most significant of these is an improvement in restart and recovery for IMS users under VM.

If the control program which passed data between IMS and VM had to be restarted this previously involved substantial rebuilding of the IMS database. A "storage preservation" extension is said to enable the database to recover from such an interruption substantially automatically.

Other system extensions allow two virtual machines under VM to share control of a 3270 terminal. Accounting of VM activity can now be directed to a disc rather than a card punch.

The Seas meeting also gave some valuable insight into possible IBM trends in hardware and software organisation in general. A talk on this subject by D. Norris, of IBM Poughkeepsie was, however, accompanied by the usual provision that his views were personal, and did not necessarily represent company policy.

Norris predicted that current trends in memory technology could lead to a future configuration consisting of several processors surrounding such a memory.

Because of its existing philosophy of concealing the real organisation of the memory from the user, who works with virtual addresses, MVS would ease such a change, Norris said.

Aid to format layout

A COMPANION product for the Videcob online programming aid (CW, October 13) has been produced by Gresham Computer Services, of Southampton. Videmap provides for the interactive generation of visual display formats on ICL 1900 series and 2903 hardware, condensation and storage of the format on a file and integration with a Cobol program.

The format is defined by inputting the fields directly on to the screen, exactly as they will appear in the final program. Spaces for fields to be input to the screen during the program are de-limited with square brackets. Separate Cobol formats are then generated for the output and reply descriptions of the screen.

Users of Videcob can place their screen formats on the Videcob library.

Videmap, says Gresham, not only eases the task of online programmers; it also enables the programmer to show his planned screen in advance to the department which will be using the VDUs. Alterations can then be suggested, and the screen designed co-operatively.

The French connection

AN interactive graphics package, already well-known on ICL equipment, has been released by SEL Computers for its own SEL 32 series of minis.

Known as Euclid, the package is controlled through basic geometrical descriptions of three-dimensional objects, and so is claimed to be applicable to a wide variety of applications.

Euclid was developed in France, and was brought to the UK by DA Computer Services (CW, June 11, 1973).

Dynamic memory strategy

DETAILS have now been obtained of the strategy of the dynamic memory management which is the chief feature of Interdata's Dynamic OS/32 MT operating system (Software File, October 20).

Memory allocation is dependent both on the initial memory requirement of the task and on user and task-directed amendment. Unlike Data General's AOS, it does not use periodic heuristic evaluation of resource requirements.

Memory is allocated to tasks on a first-come-first-served basis, as they are loaded. When memory is full, further tasks are allocated hypothetical mem... rolled out onto disc. The future rolling in an... out of tasks is controlled by their priority ra... by a previously specified "roll eligibility". Th... changed by the operator, or by another task.

As a further memory-saving technique, t... be segmented into "pure" and "impure" porti... pure parts contain only the code areas which... be changed during execution. Hence this... re-entrant, and only one copy need be... memory, although several users may be acc...

SyFA to emulate 3270 terminal

AN emulator has been produced by Computer Automation, enabling its SyFA terminal to behave as an IBM 3270 terminal whenever the operator wishes while, at other times, it processes its normal workload. The SyFA can thus be integrated into an IBM network for both online and RJE access.

As many as 15 of the SyFA's maximum 24 screens may be operated concurrently in 3270 mode. The RJE access is an option, and requires slight modification to IBM software. No such modification is required for the main online access capability.

CA has already gained an impressive pilot installation for the emulator, at the Dow Chemical Company's Michigan Division. The SyFA's used in a wide vari... from order entry an... management to pro... from pollution mo... struments.

Maritime aids released

A PAIR of programs designed to aid the shipping industry and clients involved in maritime transport have been released by Glasgow marine Consulting Engineers Y-ard.

Invaps assists with the financial evaluation of transportation projects, involving... single ship or a... tackles the mech... traints on transpo... taining a file of s... structural propert... calculations for... discharge.

PROGRAMMER NOTES

How do you loop and DO . . . ?

JUDGING from previous columns (Programmer Notes, July 28 and August 25), readers are particularly adept at suggesting improvements in programming languages, as well as offering well-founded criticism of the features of current languages.

This week, an interesting structure has come to our notice in a language for microprocessors, and this seems a good jumping-off point for a discussion on methods of handling that universal program construct, the "loop" or DO statement.

The lowest-level way of implementing such a structure is, of course, to place at the end of the repeated block of statements a conditional GOTO referring to the beginning of the block.

This is very much frowned upon nowadays, especially as most high-level languages have specialised DO statements. The DO statement usually includes the condition for the looping to terminate.

This approach is avoided by Zilog in its PL/Z language (CW, October 13). The language indicates that a block of statements is to be repeated merely by placing DO at the start of the block and OD at the end.

Termination is provided by including anywhere in the block a conditional EXIT statement, which transfers control to the statement following the OD.

If such a statement is inadvertently omitted, the program will continue to loop infinitely. Zilog contends that such a structure gives the programmer more responsibility.

Do our readers want this kind of responsibility thrust upon them, or would you prefer your programming languages to be foolproof?

The more conventional DO statement, with controls included has, nevertheless, a number of different forms. Is the choice between stepping a variable, DO . . . WHILE and DO . . . UNTIL merely a matter of taste, or do our readers have any clear reasons for preferring one to the others?

There are several methods of indicating the end of the DO loop, by statement reference, BEGIN . . . END, or Basic's NEXT. Structured languages seem to favour this odd word OD. Again are there any clear preferences? Will we ever be rid of the GOTO?

31 Countries* worldwide use CMC British made key-to-disk equipment

Can there really still be people punching cards?

Punched cards have a long history.

More than 50 years longer than computers, in fact!

Needing an easy-to-come-by data entry medium in the 1940s EDP pioneers chose the punched card.

But who wants to be a pioneer for

Whether you have two or one-hundred-and-two terminals CMC KeyProcessing is the input medium for you.

KeyProcessing – the complete data entry system.

first in key-to-disk

CMC

... Methodology column (CW August 25), Tom Gilb asserted his belief that

MICHIE'S PRIVATEVIEW

What if the machines become inscrutable...?

I HAVE previously noted the emergence of computer programs able to outperform experts in selected intellectual tasks where the machine approach displays a style quite different from the human's. A small but telling example from chess came to light at the Toronto IFIP in August.

As mentioned in Chesslab, International Masters Berliner and Day were invited to demonstrate their skill against a move-perfect program for a particularly tricky sub-game of chess, the King-Queen-King-Rook ending (CW, October 6).

Except for a few special starting positions the Queen's side has a theoretical win against the Rook's side, and a strong Master can ordinarily be expected to win against any human opposition. Yet Berliner and Day found themselves unable to defeat the machine however many times they tried.

The most upsetting feature, they complained, was their opponent's bizarre and counter-intuitive style, which bore no trace of the simplifying concepts which give shape to human play.

The following issues merit consideration.

Strategies evidently exist which are machine-refutable but not human-refutable. If already in chess, why not in air traffic control, power grid design or military robotics? Should we let even unintelligent machines become that smart? What are the long-term omens for man-machine communication if the partners do not share conceptual structures or any common style of apprehending and analysing problems?

For tasks of middling-to-low complexity, these are not real issues. We have already lived with them for a long time without ill effects. A number cruncher equipped with the last word in variety and efficiency of numerical routines has little in common with the conceptualisations of a human calculating prodigy such as the Edinburgh mathematician Alexander Aitken.

He would have found intercourse with a Cyber 176 concerning factorisation and the extraction of roots almost as mysterious and unsatisfying as Berliner and Day found their experience of the KQKR program.

True, he would have been able to gain an understanding of the numerical algorithms themselves, whereas the chess-masters had nothing to understand, only a four million-position lookup table.

High-speed arithmetic is an intellectual utility which does not demand that we understand or talk to it. The same goes for packages of all sorts which permeate the computing world as convenient "black boxes".

Suppose that a PERT package schedules the job better than a human project director. How much desire does he feel to pry into its detailed workings or to argue with it, so long as it is doing what he wants?

Man-machine understanding, however, acquires the highest importance in certain applications which are now on the move. The relevance is not to "black box" programs but to those for which an "open box" mode is mandatory. The fact that this latter kind are still few is a measure of the extent to which information processing has yet to penetrate into the more complex and responsible levels of human affairs.

"Complex" and "responsible" correspond to two separate reasons why we may demand that a program share its conceptual structures with the human user. The problem area may be so complex that man-machine intellectual partnership is needed for best progress.

An increasing variety of chemistry packages fall into this category. It is of interest that the US Government recently announced the setting up of a National Resource for Computation in Chemistry.

The other reason for "open box" use derives from the responsibility of the task. In air traffic control we do not care how smart the programs get. They can be as superhuman as they like. But we would care if they became inscrutable.

Various medical "expert systems" also come to mind. Without the facility to probe and question the program's reasoning, Stanford's clinical pathologists would ignore the Mycin program, however skilled it may be in bacteriological identification and drug prescription. And they would be quite right.

At Edinburgh we study how to build a common conceptual frame for man and machine. Using chess end-game knowledge we are developing facilities for easy transfer of strategies from man to machine and back.

Such studies need to be amplified in a variety of branches of knowledge so that our culture may be enriched, not eroded, by the advance of the machines. Urgent investigation in the coming decade should be devoted to the "conceptual interface".

A program is not "intelligent" in any useful sense unless it can show a convincing grasp of how the problem looks, not just to a 10 mips device, but to the computationally limited instrument within my skull.

Donald Michie

Graphic Data System refined to aid VLSI designers

ADVANCES in hardware technology can set severe problems for designers who must, in turn, call upon the resources of computer-aided design systems to keep pace with them. Calma, one of the specialists in CAD, has taken specific steps in enhancement of its circuit design aids to cater for the hardware designers' progress into very large scale integration, VLSI, technology.

A primary problem is that of resolution. VLSI circuitry features may be only 0.1 microns wide, while whole circuits could be as much as 1 cm square. This requires a resolution of 1 in 100,000, more than 16-bit plotting co-ordinates can handle. Calma, in its new Graphic Data System II, has accordingly upgraded its 16-bit co-ordinates to 32 bits.

On a large and elaborate circuit, the designer is still faced with the speed and space problems resulting from the handling of a vast amount of data. Aimed at minimising these problems, GDS II has been augmented [illegible] system to provide faster access to required data than conventional files. Data Compression algorithms help to reduce space.

The system's new display handling software is also claimed to alleviate a bottleneck in the process of interactive design, by passing graphics data to and from the screen more quickly.

A multiprogramming operating system enables up to six displays to be handled simultaneously, while the system is also performing background tasks such as plotting, or putting graphical data on magnetic tape to drive an offline-plotter or generator for the photographic matrices used in circuit manufacture.

The design process is controlled by a specialised high level language, devised by Calma, and named GPL II. GPL II commands are adaptable to novices as well as expert users, and provision is also made for "menu-type" selection of routines, says Calma.

The GDS II configuration is based on Data General's S/230 scientific machine which is, in turn, based on the Eclipse processor.

PUZZLER

THERE are several ways to arrange 10 points so that five lines of four-points-in-a-line are formed. And when those five lines are pencilled in, various interesting shapes are outlined — the Magic Pentagram five-pointed star is one example.

However, there is only one arrangement which results in two of the points being completely enclosed when the five lines are drawn in (with the Pentagram, no points are enclosed). Can you work it out before turning to page 47?

SOFTWARE FILE — EDITED BY STEPHEN BELL

Facing problems of rapid growth

RAPID expansion in a company's business frequently leads to more complex information requirements and hence more involved DP solutions. A good illustration of this growth at work is provided by container transport company, OCL.

Having already ventured into teleprocessing, the company is now in the course of both extending its telecommunications facilities and transferring its information to database organisation. This progress, as OCL pointed out, is due purely to expansion in volume and immediacy of its business, rather than any qualitative change. The company's single line of business would remain transport of containers, and little could be added to this, said a spokesman.

OCL's main UK container terminal, at Tilbury, is serviced by IBM equipment, which has progressed from a 360/30 in 1967 to a 370/158 at present. The company is currently considering acquiring another 158, and linking the two under MVS — replacing its present DOS/VS environment. With the emergence of the 3030 series, however, one of these machines is being considered as a possible alternative.

Teleprocessing was first mooted in 1971, as a faster method of communicating information about containers to and from regional UK and European offices. Previously, this has been managed on punched tape. Today, there are over 100 IBM 3270 terminals at Leeds, Liverpool, Manchester, Paris, Bremen, Rotterdam and other offices.

TP access is managed through IBM's CICS/VS software. While admitting that there were probably other more efficient rivals, OCL representatives pointed out that most of the progress in the independents had occurred after the TP decision had been made — for example, the new releases of Altergo's Shadow and TSI's Task/Master. At that time, they said, CICS was the most attractive product on the market.

The forthcoming progression to database is a different story. OCL has decided to use Cullinane's IDMS and will probably be the first UK installation to use the database in teleprocessing mode.

The decision to go to an independent for database software emphasises again one of the frequently criticised shortcomings of IBM's own DL/I — its rigidly hierarchical organisation. OCL's need to access information through several different keys meant that a network data organisation was the only answer, without duplicating data items, said project manager Phil Ingram.

The first application to be put on the database is a new container control function. This has been implemented and tested, but is not yet in production usage.

Container control informs the OCL offices of the location and status of the company's containers around the world. This information may be required in several different forms; a depot may, for example, want details of all containers arriving there that day. Alternatively, it may wish to trace containers of a special type, to fulfil an order.

Other information needs include historical details of previous cargoes stored in each container. "Obviously we can't ship food in a container which has been used for chemicals," said OCL.

The company leases several of its containers from other companies, and details of these, their location and the money owing on them must also be maintained. These complex requirements make clear the advantage which will be gained by implementing a network database.

Most of the information is produced regularly in the course of normal business, but ad hoc online inquiry will become an increasingly important facet of the computer system, aided by CICS and IDMS, OCL predicts.

The present CICS-IDMS interface is not as streamlined as might be wished, admitted database administrator Karen Foster. A new release of the interface from Cullinane, is however, imminent. OCL, like most UK installations of IBM IDMS, acquired the database through Scicon.

OCL has also recognised the need for a data dictionary, and is using Arthur Andersen's Lexicon product.

The conversion to MVS is expected to be complete by March, but, prior to this, in January, the company plans to implement VM/370, at least temporarily. With this, the database implementation and the second mainframe, the DP department's load is increasing.

Accordingly, the company is recruiting new DP staff intensively, and hopes eventually to have some 260 personnel.

Standards document

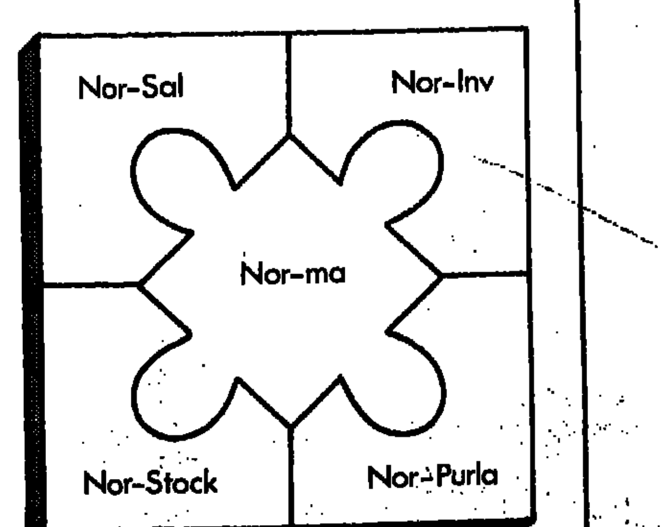
SHORTLY following its criticised standard for decision tables (CW, August 4), the British Standards Institution has published a standards document* relating to another technique increasingly used in programming — the program network chart.

The chart expresses the process and data components of a software system and their relationship. Complex charts can be simplified according to well-defined rules. The report summarises these rules and defines standard symbols to represent types of software component and their interconnections.

*BS5476 "Program Network Charts," £2.70, BSI Sales Department, 101 Pentonville Road, London, N1 9ND.

save with Westinghouse
use Quikjob
The fast file maintenance and creation facility
call 01-951 1999

The logical answer
to your accounting problems



Integrated Accounting Packages
Already being used by over 500 major companies Marketed throughout the USA, Canada and Europe
nsc northern software consultants limited
15 Cross Street Manchester M2 1WE Tel: 061-832 [illegible]
Telex No. CHAMCOM MANCHESTER [illegible]

How Release 5 stops worries

THE official announcement of Release 5 of IBM's VM/370 operating system has relieved several worries for IBM users. The most significant reassurances given in the announcement, at the latest meeting of Seas, the Share European Association user group, was that VM/370 will be supported on the current models of the 3030 series and, presumably, on future models.

Users have become increasingly apprehensive that IBM was seeking to push the users of its new large machines irrevocably towards MVS (CW, October 20).

The assurance of continuing VM support indicates that, despite heavy promotion of MVS, IBM now sees VM also as a system with a long future.

This appears to represent a change of heart on IBM's part, said a Share representative. The driving force was undoubtedly the increasing popularity of the system. "IBM, like any other business organisation, has adjusted its view in the face of customer enthusiasm."

A number of "system extensions" have been made to VM, as part of Release 5. Perhaps the most significant of these is an improvement in restart and recovery for IMS users under VM.

If the control program which passed data between IMS and VM had to be restarted this previously involved substantial rebuilding of the IMS database. A "storage preservation" extension is said to enable the database to recover from such an interruption substantially automatically.

Other system extensions allow two virtual machines under VM to share control of a 3270 terminal. Accounting of VM activity can now be directed to a disc rather than a card punch.

The Seas meeting also gave some valuable insight into possible IBM trends in hardware and software organisation in general. A talk on this subject by D. Norris, of IBM Poughkeepsie was, however, accompanied by the usual provision that his views were personal, and did not necessarily represent company policy.

Norris predicted that current trends in memory technology could lead to a future configuration consisting of several processors surrounding such a memory.

Because of its existing philosophy of concealing the real organisation of the memory from the user, who works with virtual addresses, MVS would ease such a change, Norris said.

Aid to format layout

A COMPANION product for the Videcob online programming aid (CW, October 13) has been produced by Gresham Computer Services, of Southampton. Videmap provides for the interactive generation of visual display formats on ICL 1900 series and 2903 hardware, condensation and storage of the format on a file and integration with a Cobol program.

The format is defined by inputting the fields directly on to the screen, exactly as they will appear in the final program. Spaces for fields to be input to the screen during the program are de-limited with square brackets. Separate Cobol formats are then generated for the output and reply descriptions of the screen.

Users of Videcob can place their screen formats on the Videcob library.

Videmap, says Gresham, not only eases the task of online programmers; it also enables the programmer to show his planned screen in advance to the department which will be using the VDUs. Alterations can then be suggested, and the screen designed co-operatively.

The French connection

AN interactive graphics package, already well-known on ICL equipment, has been released by SEL Computers for its own SEL 32 series of minis.

Known as Euclid, the package is controlled through basic geometrical descriptions of three-dimensional objects, and so is claimed to be applicable to a wide variety of applications.

Euclid was developed in France, and was brought to the UK by DA Computer Services (CW, June 11, 1973).

PROGRAMMER NOTES

How do you loop and DO . . . ?

JUDGING from previous columns (Programmer Notes, July 28 and August 25), readers are particularly adept at suggesting improvements in programming languages, as well as offering well-founded criticism of the features of current languages.

This week, an interesting structure has come to our notice in a language for microprocessors, and this seems a good jumping-off point for a discussion on methods of handling that universal program construct, the "loop" or DO statement.

The lowest-level way of implementing such a structure is, of course, to place at the end of the repeated block of statements a conditional GOTO referring to the beginning of the block.

This is very much frowned upon nowadays, especially as most high-level languages have specialised DO statements. The DO statement usually includes the condition for the looping to terminate.

This approach is avoided by Zilog in its PL/Z language (CW, October 13). The language indicates that a block of statements is to be repeated merely by placing DO at the start of the block and OD at the end.

Termination is provided by including anywhere in the block a conditional EXIT statement, which transfers control to the statement following the OD.

If such a statement is inadvertently omitted, the program will continue to loop infinitely. Zilog contends that such a structure gives the programmer more responsibility.

Do our readers want this kind of responsibility thrust upon them, or would you prefer your programming languages to be foolproof?

The more conventional DO statement, with controls included has, nevertheless, a number of different forms. Is the choice between stepping a variable, DO . . . WHILE and DO . . . UNTIL merely a matter of taste, or do our readers have any clear reasons for preferring one to the others?

There are several methods of indicating the end of the DO loop, by statement reference, BEGIN . . . END, or Basic's NEXT. Structured languages seem to favour this odd word OD. Again are there any clear preferences? Will we ever be rid of the GOTO?

Dynamic memory strategy

DETAILS have now been obtained of the strategy of the dynamic memory management which is the chief feature of Interdata's Dynamic OS/32 MT operating system (Software File, October 20).

Memory allocation is dependent both on the initial memory requirement of the task and on user and task-directed amendment. Unlike Data General's AOS, it does not use periodic heuristic evaluation of resource requirements.

Memory is allocated to tasks on a first-come-first-served basis, as they are loaded. When memory is full, further tasks are allocated hypothetical memory and rolled out onto disc. The future rolling in and rolling out of tasks is controlled by their priority rating and by a previously specified "roll eligibility". This can be changed by the operator, or by another task.

As a further memory-saving technique, tasks can be segmented into "pure" and "impure" portions. The pure parts contain only the code areas which will not be changed during execution. Hence this code is re-entrant, and only one copy need be kept in memory, although several users may be accessing it.

SyFA to emulate 3270 terminal

AN emulator has been produced by Computer Automation, enabling its SyFA terminal to behave as an IBM 3270 terminal whenever the operator wishes while, at other times, it processes its normal workload. The SyFA can thus be integrated into an IBM network for both online and RJE access.

As many as 15 of the SyFA's maximum 24 screens may be operated concurrently in 3270 mode. The RJE access is an option, and requires slight modification to IBM software. No such modification is required for the main online access capability.

CA has already gained an impressive pilot installation for the emulator, at the Dow Chemical Company's Michigan Division. The SyFA's at Dow are used in a wide variety of tasks from order entry and inventory management to processing data from pollution monitoring instruments.

Maritime aids released

A PAIR of programs designed to aid the shipping industry and clients involved in maritime transport have been released by Glasgow marine Consulting Engineers Y-ard.

Invaps assists with the financial evaluation of transportation projects, involving either a single ship or a fleet. Tands tackles the mechanical constraints on transport, by maintaining a file of ships' critical structural properties, to ease calculations for loading and discharge.

31 Countries* worldwide use CMC British made key-to-disk equipment

Can there really still be people punching cards?

Punched cards have a long history.
More than 50 years longer than computers, in fact!
Needing an easy-to-come-by data entry medium in the 1940s EDP pioneers chose the punched card.
But who wants to be a pioneer for ever?

Whether you have two or one-hundred-and-two terminals CMC KeyProcessing is *the* input medium for you.

KeyProcessing – the complete data entry system.

first in key-to-disk
CMC

market place

Contact Stuart Moore

For Advertising Rates PHONE 01-261 8757

Communication that's kind to your pocket

Teletype 43

The Teletype 43 teleprinter is new—versatile—economic—reliable. What other terminals offer as extras, the Teletype 43 has as standard.

For example:
132 character line
Upper/lower case
10-30 CPS operator-switchable full/half duplex
Switch parity on/off switch
True 30 CPS (buffered)

When there is a suspected fault, there is a test key that checks all the printer functions.

All this helps make the Teletype 43 insurpassable value in price/performance for all applications.

Find out more about the Teletype 43 from:

Teleprinter Equipment (Division of GADC Ltd) Tring Herts HP23 6AJ Phone: Tring (04428 2) 4011

DEC TIME FOR SALE

PDP 11/34—rsts/e —Basic plus.
Online facilities. 16 line Multiplexor
Terminals available
Central London — Attractive rates

Phone: 01-629 6602 extn. 254
01-629 6900
01-629 6863

---

80 COLUMN CARD INTERPRETER

Interpreting Speed in excess of 3000 cards per hour
Available in any coding: IBM ICL, etc.
For free demonstration contact:

COMMERCIAL DATA LTD.
2 HOLLY COURT, BILLERICAY, ESSEX
TEL: BILLERICAY (02744) 58028

WANTED

Olivetti DE523 terminals

Tel: M. E. Fleming Darleydale 4257

FOR SALE

Univac VP Card Punches. Sale or Hire, with or without operators.

Tel: 01-464 5038

ASR 33 TELETYPES

A fully comprehensive maintenance contract will cost you only £69 95 + VAT each year
WHY PAY MORE!!
We also rent ASR 33s for as little as £25 per month.
WHY PAY MORE!!

DDT MAINTENANCE LTD.
5 Watkin Road, Wembley, Middx.
Tel. 01-903 6977

Area Sales for
Midlands 021-459 5959
Scotland 041 271 0761
Wales Chepstow 2193

CTB

For all computer time.

WE BUY SCRAP COMPUTER LISTINGS AND PUNCH CARDS

Best prices paid
Collections or delivery to
LEYTON WASTE PAPER CO. LTD.
Rowin Works, Lynn Road
Leytonstone E.11
01-558 2131
Contact: MIKE BOWLES

WANTED

DEC PDP 11/34 or 35

End-user requires secondhand equipment for immediate purchase.

Please phone 0302 66843

FOR SALE

4 RKO disc drives and controller (DEC maintained) also RKOS disc packs.

Tel. 021-359 3020 Ext. 210

FOR SALE

BELLING AND LEE TYPE L3000

Complete modular prefabricated free standing radio frequency interference shielded enclosure.
Dimensions: 12' × 8' × 12' complete with 26 Amp - 220V 50 HZ Filters plus 1 fan.
Apply Box 1901, Computer Weekly.

FOR SALE

314 Sorters, 100 cpm Reproducers, Collators. Three months' guarantee.

Tel: 01-237 2976

FOR SALE

Ventek Data Point 2200

2 Disc Drive, 1 Fixed, 1 Removable, 1 Centronics dual head Matrix printer Multiport and 4 3360 V.D.Us

Contact Wardair 499 8485

---

tectonics guarantees

12 MONTHS FREE SUPPORT

on all development projects, from one-off programs to major systems.

contact Terence Salmon ORP 29114
Tectonics Ltd 54 Tintagel Rd Orpington Kent
The fixed price fixed time specialists

VDU DESKS

L-shaped right or left-hand, genuine formica worktop. Flat or well. Courtesy Panel. Rigid Tubular frame work.

£99 Quantity Discounts available

Write or telephone:
D. N. Computer Services Ltd.
St. Martins St., Rochdale
Tel. Rochdale (0706) 54711

NELSON COMPUTER SERVICES LTD.

BUY & SELL
COMPUTER SYSTEMS — ICL / IBM / DEC
BCL.
DATA-PREP EQUIPMENT — ICL — IBM
UNIVAC / KODE / TELETYPE
BURSTERS/DECOLLATORS/GUILLOTINES
D.P. STORAGE CABINETS (inc FIRE PROOF)

FOR SALE
IBM 029 Punches ... and ... print
IBM 082 Sorter ... V.P. and V.I.P. Punches ...
Bursters ... Guillotines ... Hand Punches
Hand punches refurbished £85 Hand punches as new with chip tray and cover £110 Ex Del & VAT

FOR FURTHER INFORMATION CONTACT
St. John's Court, Rawtenstall, Lancs BB4 7PA. Tel. Rossendale (07062) 28125

YOU NEED THE BEST SO FORGET THE REST

Contact Sarah Smith on 01-283 3237 for

- Top quality contract programming staff always available
- Rates from £150 to £220 per week.
- References checked and work guaranteed
- Permanent staff also available

MARTON associates 206-210 Bishopsgate, EC2

FOR COMPUTER PEOPLE AT THE CROSSROADS

MEGALEASING

If you're thinking of buying, selling or leasing a computer — call Megaleasing the big name in secondhand computers

Megaleasing Limited 58 Grosvenor Street London W1X 0DD Telephone 01-491 7774 Telex 27195

---

reprints

If you are interested in a particular article/special Feature or advertisement published in this issue of
COMPUTER WEEKLY
why not take advantage of our reprint service. Reprints can be secured at reasonable cost to your own specifications providing an attractive and valuable addition to your promotional material. *Minimum order 250.*

For further details contact:
Brian Durrant, IPC Electrical-Electronic Press Ltd.
Phone: 01-261 8597 or simply complete and return the form below.

To: Brian Durrant, Reprints Department
Dorset House, Stamford Street, London SE1 9LU

I am interested in ....copies of the article/advertisement headed .... featured in COMPUTER WEEKLY
on page(s)..........in the issue dated ....

Please send me full details of your reprint service by return of post.

Name ....
Company ....
Address ....
.... Tel. No. ....

ELECTRONIC BROKERS LTD

NEW 80 Column Hand Punch

- redesigned incorporating latest production techniques
- Modern styling and attractive blue ... case
- no hidden extras — alpha numeric key tops, wreck knife, chip tray and dust cover all standard
- 12 month warranty

Send for Brochure

WE BUY — WE SELL

SCOOP

up to **45% OFF HAZELTINE**

Teletype-compatible CRT Terminals

HAZELTINE 1000
960 Characters
full half Duplex
New List price £900
OUR PRICE £525

HAZELTINE 2000
1998 Characters Editing full half Duplex and batch mode
New List Price £1649
OUR PRICE £895

HAZELTINE 1200
1920 Characters
full half Duplex
New List Price £941
OUR PRICE £725

All units factory refurbished to as new standard and covered by 90 day warranty. All prices subject to carriage and VAT

- 12" Diagonal Screen
- TTY Format Keyboard
- 64 ASCII Character Set
- 5x7 Dot Matrix
- Switch selectable Transmission and Parity
- Standard CCITT V24 interface

ELECTRONIC BROKERS LTD. (Computer Sales & Services Division)
49-53 Pancras Road, London NW1 2QB Tel: 01-837 7781
TELEX: 298694

PROFIT FROM YOUR COMPUTER WASTE

ELECTRONIC BROKERS MINI COMPUTER EXCHANGE

DEC PDP8 and PDP11 Series Minis and Peripherals
ASR33 & KSR33 teletype terminals fully reconditioned
Coded and Uncoded Keyboards Magnetic tape stations
Latest arrival — super PDP8 SYSTEM
DEC PDP8E 8K processor
KC8EA Programmers Panel
KL8M & KL8JA Serial Interfaces
RK8E Disk Control
2 RK05 8B Disk Drives
Mounted in standard DEC 4ft cabinet complete with power supply in immaculate condition and highly recommended
BRAND NEW TM11-TM10 magnetic tape station in standard DEC 6ft cabinet
Large stocks of equipment and spares
Call in at our showrooms or send for catalogue

Jobs for people, and people for jobs

Knight 01-491 4706

FOR USED DP EQUIPMENT (W)(D)(P)
BUY OR SELL THROUGH 01-464 9011

NEW DE LUXE 80 COLUMN PUNCHES WITH SKIP OR NON-SKIP OPTION
A/N KEY TOPS, CHIP TRAY, WRECK KNIFE, DUST COVER. MAINTENANCE AVAILABLE FOLLOWING 1 YEAR GUARANTEE PERIOD

(W)(D)(P) 01-464 9011
WEBSTER D/P SERVICES LTD
65 WIDMORE ROAD, BROMLEY
KENT BR1 3AA

KEY OPERATIONS ASSISTANCE LTD

CONTRACT
★ OPERATORS ★
★ PROGRAMMERS ★
★ PUNCH OPERATORS ★

LEADING SUPPLIERS OF CONTRACT OPERATIONS PERSONNEL THROUGHOUT EUROPE

SAVE TIME AND MONEY CALL US FIRST

01-493 6696
01-499 1787

4 HALF MOON STREET, LONDON W1Y 7RA

EUROPS

CoOperators supply first-rate contract operations staff for long or short term needs - FAST

RING NOW 01.836 8411

IMMEDIATE DELIVERY OF NEW

PDP II v 03

Floppy Disc Systems with software packages for STOCK CONTROL PRODUCTION CONTROL LEDGER ANALYSIS

Also available:
Low cost version of these packages supplied with Intel/Memorex floppy disc system at prices from £6,000 complete.

data-J

Data-J Ltd., 7 Churchill Court, Rustington, Sussex
Tel: 09062-72902

Contract Staff available

for Home and Overseas assignments

01 680 2400

Metra Lowndes-Ajax
Metra Lowndes-Ajax
119 High Street, Croydon CR0 1QJ
We are always interested in hearing from people who wish to work on a contract basis

---

CONTRACT OPERATORS UK & EUROPE

Phone Pat Eagling
01-402 9355
MARCOL COMPUTER SERVICES LTD.

MARCOL — a ... company of The Norwich Union

OPERATORS KPG PROGRAMMERS KPG KEY PUNCH OPERATORS KPG

SUPPORT SERVICES YOU KNOW YOU CAN RELY UPON

KPG Ltd 28 THE BUTTS BRENTFORD MIDDX 01-568 7345

ADP Automatic Data Processing
Management Dynamics Division

DATA PREPARATION SERVICES
CARDS: PAPER TAPE: MAG. TAPE

Heathrow House, Bath Road,
Cranford, Hounslow, Middlesex, TW5 9QP
Telephone 01-759 9191/1502/9828

FOR SALE

OLIVETTI DE 523's DE 521's

Tel: 0622-51793 or 0622-46403

FOCUS computer services limited

CONTRACT or PERMANENT—
ANALYSTS - PROGRAMMERS - OPERATORS
PUNCH OPERATORS - DATA CONTROLLERS

Tel. 01-487 5781 28A Devonshire Street - London - W1

HEXAGON computer services

01-439 3671

145 WARDOUR STREET LONDON W1V 3TB

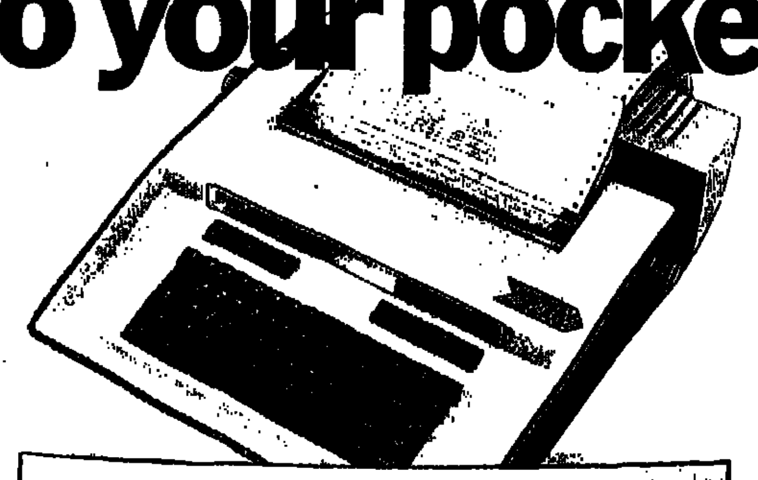
Contract & Permanent recruitment
Total DP Support at its best
Programming-Operations
Data Preparation-Systems
Data Control-Technical Support

market place

Contact Stuart Moore

For Advertising Rates PHONE 01-261 8757

Communication that's kind to your pocket



Teletype 43

The Teletype 43 teleprinter is new—versatile—economic—reliable. What other terminals offer as extras, the Teletype 43 has as standard.

For example:
132 character line
Upper/lower case
10-30 CPS operator-switchable full/half duplex
Switch parity on/off switch
True 30 CPS (buffered)

When there is a suspected fault, there is a test key that checks all the printer functions.

All this helps make the Teletype 43 unsurpassable value in price/performance for all applications.

Find out more about the Teletype 43 from:
Teleprinter Equipment (Division of GADC Ltd) Tring Herts HP23 6AJ Phone: Tring (044 282) 4011

CTB For all computer time.
King Jane Hepworth-Thompson on 01-891 0731
COMPUTER TIME BROKERS LTD.
A Computer World Trade Company

FOR SALE
BELLING AND LEE TYPE L3000
Complete modular prefabricated free standing radio frequency interference shielded enclosure
Dimensions: 12' × 8' × 12', complete with 26 Amp - 220V 50 HZ Filters plus 1 fan.
Apply Box 1901, Computer Weekly.

tectonics guarantees 12 MONTHS FREE SUPPORT on all development projects, from one-off programs to major systems.
contact Terence Salmon ORP 29114
Tectonics Ltd 54 Tintagel Rd Orpington Kent
The fixed price fixed time specialists

WE BUY SCRAP COMPUTER LISTINGS AND PUNCH CARDS
Best prices paid
Collections or delivery to
LEYTON WASTE PAPER CO. LTD.
Rowin Works, Lynn Road
Leytonstone E.11
01-558 2131
Contact: MIKE BOWLES

FOR SALE
314 Sorters, 100 cpm Reproducers, Collators. Three months' guarantee.
Tel: 01-237 2976

VDU DESKS
L-shaped right or left-hand, genuine formica worktop Flat or well, Courtesy Panel: Rigid Tubular frame work.
£99 Quality Discounts available
Write or telephone:
D. N. Computer Services Ltd.
St. Martins St., Rochdale
Tel. Rochdale (0706) 54711

FOR SALE
Ventek Data Point 2200
2 Disc Drive. 1 Fixed, 1 Removable, 1 Centronics dual head Matrix printer Multiport and 4 3360 V.D.Us
Contact Wardair 499 8485

WANTED
DEC PDP 11/34 or 35
End-user requires secondhand equipment for immediate purchase.
Please phone 0302 66843

NELSON COMPUTER SERVICES LTD.

BUY & SELL
COMPUTER SYSTEMS — ICL / IBM / DEC / BCL
DATA-PREP EQUIPMENT — ICL / IBM / UNIVAC / KODE / TELETYPE
BURSTERS/DECOLLATORS/GUILLOTINES
D.P STORAGE CABINETS (inc FIRE PROOF).

FOR SALE
IBM 029 Punches ... Hand punches refurbished £85 ... Hand punches as new with chip tray and cover £110 ... Ex Del & VAT

FOR FURTHER INFORMATION CONTACT
St. John's Court, Rawtenstall, Lancs BB4 7PA. Tel. Rossendale (07062) 20126

FOR SALE
4 RKO disc drives and controller (DEC maintained) also RKOS disc packs.
Tel. 021-359 3020 Ext. 210

YOU NEED THE BEST SO FORGET THE REST
Contact Sarah Smith on 01-283 3237 for
- Top quality contract programming staff always available
- Rates from £150 to £220 per week.
- References checked and work guaranteed
- Permanent staff also available.

MARTON associates 206-210 Bishopsgate, EC2
FOR COMPUTER PEOPLE AT THE CROSSROADS

DEC TIME FOR SALE
PDP 11/34—rsts/e — Basic plus.
Online facilities. 16 line Multiplexor
Terminals available
Central London Attractive rates
**Phone: 01-629 6602 extn. 254
01-629 6900
01-629 6963**

80 COLUMN CARD INTERPRETER
Interpreting Speed in excess of 3000 cards per hour
Available in any coding: IBM ICL, etc.
For free demonstration contact:
CDL COMMERCIAL DATA LTD.
2 HOLLY COURT, BILLERICAY, ESSEX
TEL: BILLERICAY (02744) 58028

WANTED
Olivetti DE523 terminals
Tel: M. E. Fleming Darleydale 4257

FOR SALE
Univac VP Card Punches. Sale or Hire, with or without operators.
Tel: 01-464 5038

ASR 33 TELETYPES
A fully comprehensive maintenance contract will cost you only £69.95 + VAT each year.
WHY PAY MORE!!
We also rent ASR 33s for as little as £25 per month.
WHY PAY MORE!!
DDT MAINTENANCE LTD.
5 Watkin Road, Wembley, Middx.
Tel. 01-903 6977
Area Sales Tel
Midlands 021 459 5965
Scotland 041-221 9761
Wales Chepstow 2193

MEGALEASING
If you're thinking of buying, selling or leasing a computer – call Megaleasing the big name in secondhand computers.
Megaleasing Limited 58 Grosvenor Street, London W1X 0DD Telephone 01-491 7774 Telex 27195

reprints
If you are interested in a particular article/special Feature or advertisement published in this issue of
COMPUTER WEEKLY
why not take advantage of our reprint service. Reprints can be secured at reasonable cost to your own specifications providing an attractive and valuable addition to your promotional material. *Minimum order 250.*
For further details contact:
Brian Durrant, IPC Electrical-Electronic Press Ltd. Phone: 01-261 8597 or simply complete and return the form below.

To: Brian Durrant, Reprints Department
Dorset House, Stamford Street, London SE1 9LU
I am interested in .... copies of the article/advertisement headed .... featured in COMPUTER WEEKLY on page(s) .... in the issue dated ....
Please send me full details of your reprint service by return of post.
Name ....
Company ....
Address ....
.... Tel. No. ....

ELECTRONIC BROKERS LTD
NEW 80 Column Hand Punch
... numeric key tops, wreck knife, chip tray and dust cover all standard
- 12 month warranty

Send for Brochure
WE BUY WE SELL
SCOOP
up to **45% OFF HAZELTINE**
Teletype-compatible CRT Terminals

HAZELTINE 1000
960 Characters
Full Half Duplex
New List price £900
OUR PRICE £525

HAZELTINE 2000
1998 Characters Editing
Full Half Duplex and batch mode
New List Price £1649
OUR PRICE £895

HAZELTINE 1200
1920 Characters
Full Half Duplex
New List Price £941
OUR PRICE £725

All units factory refurbished to as new standard and covered by 90 day warranty. All prices subject to carriage and VAT

- 12" Diagonal Screen
- TTY Format Keyboard
- 64 ASCII Character Set
- 5x7 Dot Matrix
- Switch selectable Transmission and Parity
- Standard CCITT V24 Interface

ELECTRONIC BROKERS LTD. (Computer Sales & Services Division)
49-53 Pancras Road, London NW1 2QB Tel: 01-837 7781
TELEX: 298694

PROFIT FROM YOUR COMPUTER WASTE

ELECTRONIC BROKERS MINI COMPUTER EXCHANGE
DEC PDP8 and PDP11 Series Minis and Peripherals
ASR33 & KSR33 Teletype Terminals - fully reconditioned

FOR USED DP EQUIPMENT (WDP)
BUY OR SELL THROUGH **01-464 9011**
NEW DE LUXE 80 COLUMN PUNCHES WITH SKIP OR NON-SKIP OPTION
A/N KEY TOPS, CHIP TRAY, WRECK KNIFE, DUST COVER. MAINTENANCE AVAILABLE FOLLOWING 1 YEAR GUARANTEE PERIOD
WDP **01-464 9011**
WEBSTER D/P SERVICES LTD 65 WIDMORE ROAD, BROMLEY KENT BR1 3AA

Jobs for people, and people for jobs
And if you're looking for new staff or a new job – permanent or contract – Knight Computers get things done.
Knight **01-491 4706**

KEY OPERATIONS ASSISTANCE LTD
CONTRACT
★ OPERATORS ★
★ PROGRAMMERS ★
★ PUNCH OPERATORS ★
LEADING SUPPLIERS OF CONTRACT OPERATIONS PERSONNEL THROUGHOUT EUROPE
SAVE TIME AND MONEY CALL US FIRST
**01-493 6696
01-499 1787**
4 HALF MOON STREET, LONDON W1Y 7RA
EUROPS

CoOperators supply first-rate contract operations staff for long or short term needs – FAST
RING NOW 01.836 8411

IMMEDIATE DELIVERY OF NEW
PDP 11 v 03
Floppy Disc Systems with software packages for STOCK CONTROL PRODUCTION CONTROL LEDGER ANALYSIS
Also available:
Low cost version of these packages supplied with Intel/Memorex floppy disc system at prices from £6,000 complete.
data-J
Data-J Ltd., 7 Churchill Court, Rustington, Sussex
Tel: 09062-72902

Contract Staff available
for Home and Overseas assignments
01 680 2400
Metra Lowndes-Ajax
110 High Street, Croydon CR0 1QJ
We are always interested in hearing from people who wish to work on a contract basis

CONTRACT OPERATORS UK & EUROPE
Phone Pat Eagling
01-402 9355
MARCOL COMPUTER SERVICES LTD.
MARCOL is an associate company of The Hanwich Group

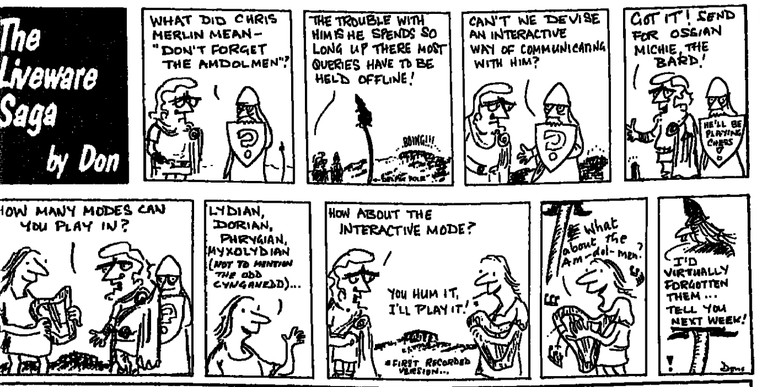
OPERATORS KPG PROGRAMMERS KPG KEY PUNCH OPERATORS KPG
SUPPORT SERVICES YOU KNOW YOU CAN RELY UPON
KPG Ltd 28 THE BUTTS BRENTFORD MIDDX 01-568 7345

ADP Automatic Data Processing
Management Dynamics Division
**DATA PREPARATION SERVICES
CARDS: PAPER TAPE: MAG TAPE**
Heathrow House, Bath Road, Cranford, Hounslow, Middlesex, TW5 9QP
Telephone 01-759 9191/1502/9628

FOR SALE
OLIVETTI DE 523's DE 521's
Tel: 0622-51793 or 0622-46403

FOCUS computer services limited
CONTRACT or PERMANENT—
ANALYSTS - PROGRAMMERS - OPERATORS
PUNCH OPERATORS - DATA CONTROLLERS
Tel. 01-487 5781 23A Devonshire Street - London - W1

HEXAGON computer services
01-555-3571
145 WARDOUR STREET LONDON W1V 3TB
Contract & Permanent recruitment
Total DP Support at its best
Programming, Operating
Data Preparation Systems
Data Control



PEOPLE

T the International Business Show in the National Exhibition Centre, rmingham, boxing personality Henry Cooper presents the managing rector of Lex Tillotson of Halesowen, Gareth Bunn, with a cut-glass hisky decanter and six tumblers. Lex Tillotson is the 500th customer for e CompAct 8 OCR bureau system offered by Applied Computer chniques Ltd, who were exhibiting at the ISB.

David Fairgrieve becomes marketing manager, UK and Overseas, th BCL Molecular Computer Systems. He is replaced as London and ast Anglian branch sales manager y Geoff Gandy, who was previously ales manager with Ventek.

Chris Evans returns to Midlands Computing Centre as a sales consultant after a spell with the NCB computer bureau, and Ian Davies lso joins Midlands as a sales consultant, from Data Sciences International, where he occupied the same osition.

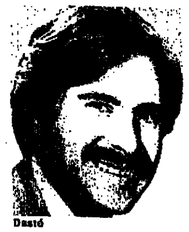
Paris—US transfer for Daste

A MOVE to the US has been made by Alain Dasté of Data General, who becomes manager of international marketing programmes and will be based at the company's Westboro, Massachusetts HQ.

Dasté's first contact with computers came at Hewlett-Packard Europe, in sales promotion positions and later as advertising manager. He joined Data General in 1974 to set up the European marketing communications division, and managed the division from Paris until his recent move.

Trevor Williams becomes a director of Intercontinental Components, where he was previously sales office manager. Roy Davison, formerly a director and general manager of a large distributor in the motor industry, joins Intercontinental as administrative director, and Harry Dowding has been promoted from sales supervisor to sales service manager.

John Kerby has become marketing manager for all Baric services and products. Previously he was manager of Baric Systemset.



Dasté

SERT executive elected

THE Society of Electronic and Radio Technicians, SERT, has made Michael Clark, deputy chairman and a deputy executive of Plessey Ltd, a vice-president of the Society.

Clark formed Plessey's electronics division in the early 1950s and helped develop the new subsidiary, Plessey Electronic Systems Ltd. At Plessey he has been involved with research on solid state technology, very high speed memory systems, oceanographic systems, nucleonics and micro-circuit research.

He is a member of the National Electronics Council and of the Council of the Institute of Directors. He was formerly a vice-president of the Society of British Aerospace Companies, and is a Companion of the Institution of Electrical Engineers and of the Institution of Electronic and Radio Engineers.

Clark

Rex Scoones has joined Capp Associates, the recruitment consultancy, as a managing consultant. Consultants Bill Theobald (London) and Alan Mannion (Manchester) have been made managing consultants, and John Hodge, also a former consultant, becomes senior consultant. Anne Brookes joins as a consultant from Control Data Institute, where she was a student liaison executive.

Paul Girdman, formerly a systems engineer with Link-Miles, joins Gamma as an analyst/programmer. Paul Whittaker, previously a student at Trent Polytechnic where he took an HND in computer studies, and Gillian Hillier join as programmers.

John Stancloff, founder and ex-director of Safestore, becomes a vice-president in the international division of Storage Technology of Louisville, Colorado. He will be responsible for the company's operations in Europe, the Middle East and Africa, and will be based in London.

Maurice Bond, latterly London area manager of Boeing Computer Services, is now with Systemsolve as North London and East Anglia territory manager. David Price, former senior projects manager with ICL in Birmingham, becomes Midlands and West territory manager.

Scoones

Bosch

Melvyn Bosch, latterly managing director of Dataproducts in Frankfurt, has been appointed to the new position of European marketing vice-president.

Mike Brayne has left Mullard's electronic assemblies division, where he was development department group leader, to join Impex Electrical as product marketing manager.

Soccer

Winter Knock-Out Cup

WITH the Summer Computer League complete (CW, October 20) the Winter Knock-out Cup is starting again, with 16 teams entering. They are divided into groups of four, with each team in a group playing the others twice. The top two teams from each group will go on to the second round, which will be played on a knock-out basis.

The groups are as follows group one: Computer Weekly, Extel, Gryphon and Lloyds, group two: Atkins, Gill and Dulfus, NCR and Victoria, group three, ICL, Jadpu, John Lewis and London Transport, group four Airlix, Altergo, Comshare and Datascene.

All teams please ensure that their results are phoned through to the Computer Weekly sports desk on 01-261 8025.

Gladys Kiddy has been appointed implementation supervisor with Gamma Associates and will be responsible for customer liaison and customer staff training. She was formerly a systems consultant with Redifon.

At Gamma's Wokingham office, four appointments have been made. Senior analyst/project leaders are Michael Kane, formerly a systems programmer with the company, Richard Barnett, who was an analyst-programmer with MBM, and Robin Davenport, from Nixdorf where he was a systems analyst. Steve Pratt, former operator and shift leader, becomes a programmer.

Daniel Carter, Ralph Gabal, George Harmon and Donald Orr, who are vice-presidents and general managers with Pertec in California, have been appointed corporate vice-presidents. Michael Shebanow, formerly vice-president of research and engineering with Pertec, have joined Shugart as vice-president of engineering.

Paul Lucas leaves Burroughs where he was a mini and VRC salesman, to join CFL, Computer Factors Ltd, as a sales executive.

Fred Tagg has gone to Burroughs as European marketing manager, from Walmore Electronics. Burroughs ECD International's UK representatives, where he was product manager of the displays group.

Dave Gynn of Eurotech, the Cable and Wireless subsidiary, has been promoted from European engineering manager to MD of Eurotech Italia. He replaces Trevor Collins, who has been transferred to the Brussels HQ as European marketing manager. Dave Catterall, previously marketing manager, becomes MDof Deutsche Eurotech.

Charles Thompson, sales executive, has moved from Data products to Translata.

David Dixon has joined Noble Hardman of Abergavenny as outside disc pack maintenance engineer.

DIARY

OCTOBER 31
Transferable systems. BCS Medical (London) Group. ICL, Euston Road, London NW1. 17.30.

NOVEMBER 1
Measurement of computer performance. Prof P. A. Samet. BCS, NW London branch. Railway Hotel, Greenford, Middx. 20.00.

NOVEMBER 2
Management Education Seminars — Project management in a structured environment. Data Processing Management Association. Montcalm Hotel, London W1. 14.00.

Is there a future for the DP professional? John Goldsmith. BCS, South Essex branch. The Bulls Eye, Basildon. 19.45.

Bankers automated clearing services. G. D. Robson, A. Pershits. BCS, Hampshire branch. Office of Population Censuses and Surveys, Titchfield. 10.00

Future storage devices. BCS, Belfast branch. Windsor Hotel, Belfast. 19.30.

NOVEMBER 2-DECEMBER 11
Systemotechnika 77, third international specialised trade fair. Global International, Moscow.

NOVEMBER 3
Cybernetics and tax law. Stavros Foundos. BCS Law Group. Financial Times Cinema, London EC4 16.00.

Hardware survey: comparison of available equipment. BCS Micro-processor Group. Polytechnic of Central London, London W1. 14.00.

Computers in cartography. Dr Thorpe, BCS, Oxford branch County Council Staff Restaurant, Oxford. 19.45.

NOVEMBER 7
Shop-floor information systems, seminar. British Production and Inventory Control Society, Cambridge branch. Garden House Hotel, Cambridge. 9.00. Registration with BPICS, 0273 38168.

Microprocessors. Prof F. G. Heath, BCS. Glasgow branch. Daniel Brown's Restaurant, Glasgow. 19.00.

NOVEMBER 8
Social applications of computers in local government. Lorraine King, John O'Brien. BCS, Croydon branch. Fairfield Halls, Croydon. 19.15.

Communicating sequential process. C.A.R. Hoare. BCS, Reading branch Copper Inn, Pangbourne, Berks 20.00

Professional standards in dealing with first-time users. David Firnberg. BCS First Time Users Group Royal Angus Hotel, Birmingham. 14.00

British pioneers in computing. Colossus. Prof Brian Randall BCS, Newcastle branch, Barras Bridge Bldg, The University, Newcastle-upon-Tyne. 19.00

NOVEMBER 8-11
Compsac 77, software and applications conference. IEEE Computer Society, Chicago, Illinois

NOVEMBER 9
How AICS can help you, the independent computer professional. New members introductory meeting. Association of Independent Computer Specialists. AICS Headquarters, 8 Leicester Street, London WC2 18.00

Retail point-of-sale systems. IFS Sussex branch. Gatwick Manor Hotel, Crawley. 19.30.

The Crossbow information retrieval system. E. Hyde. BCS Tee-side branch, Teesside Polytechnic, Middlesbrough. 19.00

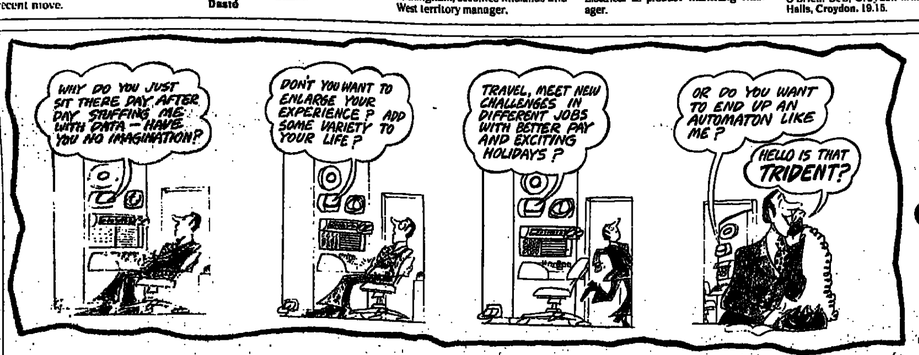
NOVEMBER 9-10
Exhibition and demonstration of university, schools and industrial projects. National Development Programme in Computer-Assisted Learning. SCET, 12 Rose Street, Glasgow. Details 01-637 0552.

NOVEMBER 10
BACS, Banking on the future. BCS, Kent branch. Computer Lab, University of Kent at Canterbury. 19.30

Practice and techniques of structured programming. D. Simpson. BCS, S York branch. Brincliffe Oaks Hotel, Nether Edge. 19.15.

NOVEMBER 10-11
Conference on data structures for survey analysis. BCS Computers in Survey Analysis Group. City University, London EC1. Details: Beverley Rowe, 01-609 0349

Scottish Gathering. IBM Computer Users' Association, Excelsior Hotel, Glasgow Airport.



Make the most of your experience -go to Trident!

Trident The Contract and Permanent Placement Specialists

Licensed by the Department of Employment as an Employment Agency and Employment Business

Trident Computer Services Ltd, Senry House, 110 Frimley Road, Camberley, Surrey. Camberley (0276) 64252. Telex No 858386.

CAD goes on show

THE third international conference and exhibition on computers in engineering and building design, CAD 78, is to be held at the Metropole Centre, Brighton, from March 14 to 16, next year. Organised by the journal, Computer-Aided Design and sponsored by Computer Weekly and others, the programme includes papers covering new developments and techniques in civil and structural engineering, manufacturing, building design and electrical / electronic engineering. There will also be papers on languages, data structures and databases.

The exhibition will include drafting and graphics systems and other peripherals, while software suppliers will present demonstrations of CAD programs and services.

The art of getting the user involved

EXPERIMENTS by psychologists have shown that a piece of news that presents good aspects before bad, is accepted more favourably than the same piece of news the other way round.

The relevance of this to DP was spelled out last week at a presentation given by Tom Stewart, of Loughborough University, to the BCS display group.

The group concerns itself particularly with those parts of a computer that spread beyond the purely DP environment — the terminals in user locations.

Stewart gave an example of how the order of presenting information could be important.

Two questions are sent to a terminal, requesting a person's name and sex. This makes the computer appear dumb, since it is usually obvious from someone's name what sex he or she is.

On the other hand, the same questions presented the other way round can give the impression that the computer is following a logical path of deduction. Small things can make a lot of difference to a distrustful layman.

Along with more care in system design, Stewart expects the type of contact between analyst and user to change as more users become online.

He likened the old form of representational user involvement to a hijack in which hostages were taken. The users began as unwilling participants, but after a time a certain amount of trust develops.

Gradually the user comes round to the DP way of thinking and may go so far as collaborating with his captors. The user was thus not really representative of those using the service.

It would be much better, said Stewart, to involve all of the users. The Swedes led in this area and their DP departments were much less insular.

Legislation in Sweden states that unions have to be involved in the ergonomics of workstation design.

This resulted in a more thorough sales job being done by analysts who were introducing new DP facilities to a user.

Practice VDU stations proliferate on the Swedish market and although Stewart did not think such gadgets appropriate here, he felt the pragmatic British would be more effective if they improvised with tables and cardboard boxes.

The analyst of the future would not only be a dab hand with sticky tape and scissors, he would be adept at putting on a good show.

Controlling the Star Wars battlefield

WHEN the latest cult film in the US, Star Wars, outsells Jaws sometime next year to become the biggest money spinning film so far, it will owe a lot to computers. Not because the computers seen on screen in this science fiction fantasy are real, but because computers were used for the first time to control the movements of model spacecraft and cameras filming them.

Gary Kurtz, the producer of Star Wars, told Computer weekly during a brief visit to London, how the battles between the spacecraft had been filmed.

"The movements of the camera and the miniature spacecraft were programmed in to the computer. To adjust the movements we could amend the program. It was pretty crude but it hadn't been done before in a film."

The computers used were built up from basic components by Kurtz' team of technicians.

Star Wars is thrilling, comic strip stuff, telling how a handsome young man called Luke Skywalker survives a number of hazards to rescue a beautiful princess from the bad guys then goes back and destroys their fortress.

He is helped by, among others, two lovable robots called See-Threepio and Artoo-Detoo, who have been compared with Laurel and Hardy because of their love-hate relationship and constant exchange of insults. See-Threepio is human in shape, while Artoo-Detoo resembles a fat Dalek with legs.

Could a thinking, emotional robot like See-Threepio ever exist? Kurtz is sure they will. "There's no reason why they shouldn't. The biggest problem is locomotion. People have built-in gyros. That's one of the hardest characteristics to copy."

Star Wars has already taken $166 million in the US. It will be released in London on December 27 and go out on general release in January.

Watch out for those computer controlled space battles.

● Left, an Imperial Stormtrooper, one of the protagonists, gets aggressive with his blaster.

OP SPOT

Shift allowances in correct perspective

SEVERAL of our readers have responded to last week's Op Spot regarding the levels of shift allowance paid to operators. For example, Mike Smith, operations manager at Queen Mary College, London, highlighted an issue touched by other readers: the relationship between basic pay and shift allowances.

"The worth of an operator should be reflected in his basic salary and is nothing to do with an allowance paid for the inconvenience of working shifts," said Smith.

"The shift allowance an employer expects to pay is that amount which will attract sufficient recruits of the right calibre and keep them on shift work as long as required.

"Forget the pseudo-scientific calculations of two points for twilight hours and three points for January 1 except when it is a Sunday, because if the formula adopted does not produce the right results you will simply have to change it."

Smith also considered allowance paid as a percentage of basic salary as opposed to a fixed amount, by mentioning the fact that: "The real consideration is whether the employer wants to retain staff on shifts indefinitely." He makes the point that the percentage system provides "some incentive to counteract the increasing desire to move on to day work."

He continued: "The inconvenience of working shifts does not come from working the odd evening or night but from the regular long term working on a shift-rota.

"The allowance should not, therefore, be seen to be geared to particular hours worked but rather be treated as an annual allowance which for the sake of convenience may be paid in 12 equal monthly instalments."

Smith also expressed the view that shifts were "a good way of earning extra money," but that operators should be encouraged to live on basic salary alone. He also had some advice for operators regarding their shift allowances.

"Shift staff should be encouraged to put their shift allowance into saving schemes and there is scope for staff and management to discuss schemes in which the employer 'banks' some or all of the shift allowance and perhaps pays a bonus to the long-term savers," he concluded.

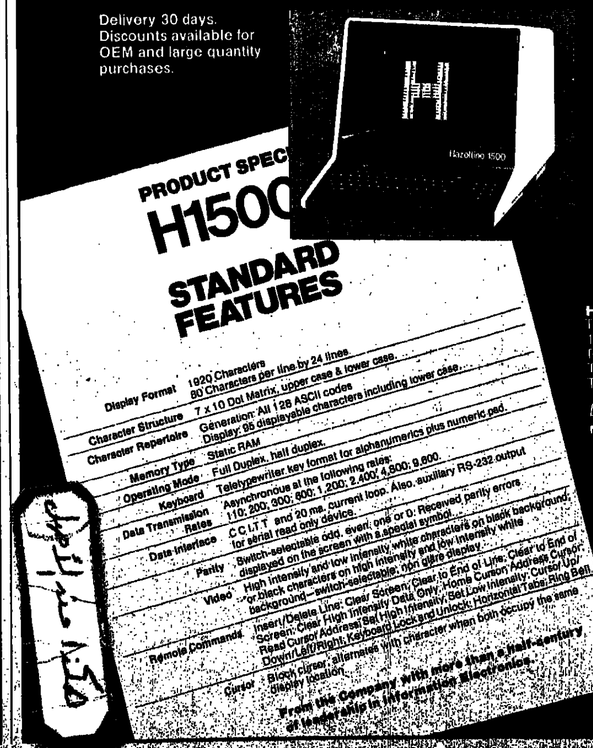
B. Midgley, of Batley, West Yorkshire, made the point that the emphasis should be on basic salary rather than shift allowance. Mentioning the fact that overtime is calculated in relation to basic salary, he considered that care should be taken to ensure that any increases in shift allowance are not in place of increments to basic salary.

NEW FROM HAZELTINE

H1500

Amazing performance at a very attractive price.

Delivery 30 days.
Discounts available for OEM and large quantity purchases.



The H1500 range includes the H1510 Buffered Editing Terminal and the H1520 Buffered Editing Terminal with Sophisticated Peripheral Controller.
Telephone for further information, or clip your business card to this advertisement and send to Hazeltine or your nearest distributor

Hazeltine Limited
Terminal House
14 Petersham Road
Richmond, Surrey, TW10 6UW
Telephone 01-948 3111
Telex 928572

Distributors

Management Control Systems
[illegible]

Fortronic (Fife) Limited
[illegible]

Technico (Communications) Limited
[illegible]

From the Company with more than a half-century of leadership in Information Electronics.

LETTERS

Reserved category

IN his letter calling for "joiners" (CW, October 6), Neville Taylor, chairman of the Data Processing Management Association, perhaps rather unwisely used the description "practitioners" in his short list of suitable candidates for membership.

It should be made manifestly clear that the designation "Incorporated Data Processing Practitioner" is legally protected by the Institute of Data Processing for use by its own professional members, and IDP has made the "practitioner" its own particular field of recruitment since its inception in 1966.

DEREK BRADLEY
Secretary,
Institute of
Data Processing

Misleading comparison

YOUR article, "US government forecast of sales trends abroad" (CW, September 8), contains a warning about the use of market share figures. To emphasise the point you compare the US Commerce Department figures with those from IDC.

You state that the Commerce Department figures have IBM and ICL level pegging "in the region of 30 to 35% each", whereas you quote the IDC figures released earlier in the year as giving IBM 47.2% and ICL 26.5%.

It should be pointed out that the figures that you quote from the Commerce Department relate to the market in terms of numbers of installed systems and those quoted from IDC are in terms of installed base values. Similar figures from IDC released at the same time give IBM 33.0% and ICL 32.2% in terms of installed units.

P. ROWELL

IDC Europa Ltd
London

Integrity is the target

SO, we're still not sure whether computing is to be a profession (Computerview, October 6)? Despite the fact that we have patients in intensive care units relying on monitoring of vital signs by computer; and despite database systems containing the most sensitive of information; not to mention multi-million-pound manufacturing plants coming under computer control, and blind landing systems relying on computers for the safety of hundreds of passengers in wide-bodied jet aircraft?

Without professional standards of performance and ethics in computing, how are we to guarantee that these systems will perform satisfactorily, and what redress will we have when things go wrong?

The BCS has adopted a Code of Practice and a Code of Professional Conduct which require that its professional members pay due heed to matters of technical competence and ethical conduct in all that they do, and moreover can be held responsible for breaches of these codes.

The real problem is that the industry has not yet fully woken up to the extreme sensitivity, and need for reliability, in many of the systems which they operate. The day must surely come when users will need to be satisfied of the professional integrity of those responsible for systems being implemented on their behalf.

The BCS has made a worthwhile start in defining a framework in which its members may act to approach such integrity, and has moreover laid down a pattern of education to ensure that its professional members have appropriate skills and understanding to achieve it.

The sad thing is that the BCS does not yet have the benefit of the help and assistance of a great many already highly skilled professional practitioners, whose advice and backing could help to ensure the future respect of users for a strong and competent computer profession.

PETER M. HAINE
Senior Course Tutor in
Computer Science
Lancaster Polytechnic

Michie caught out?

I DON'T think one would lament the advent of the pocket calculator in the classroom (Letters, October 13), but it is distressing that otherwise intelligent children are frequently unable to perform simple arithmetic. The proponents of the modern approach to mathematics do not always appreciate that practising "long multiplication", etc gives children an appreciation of the properties of numbers without which an understanding of advanced concepts is impossible.

To illustrate; my son when eight years old was in tears because he was unable to split a batch of numbers into two sets, each containing a common factor. Given the example that 14, 24, 28, 36, 35, 18 could be split into 14, 28, 35 and 18, 24, 36 the book asked for the same procedure to be carried out on other groups of numbers. Easy? Yes, if you have been taught multiplication tables, but it appears that the "computers will do it all brigade" have somehow devalued basic arithmetic to the point where primary school teachers who may have specialised in English, or another non-mathematical subject, don't always see that arithmetic is the foundation of all mathematics.

Michie's Privateview (October 13) arguments leave a lot to be desired. He claims that children do not need to study Newtonian dynamics before learning to ride a bike. This, of course, is true on the conscious level, but who would claim that people move without an informal awareness of mechanical principles?

As far as robot cricketers are concerned, it must be a joy to watch Michie fielding if he always runs towards the ball performing a close approach to a parabolic curve. In fact, the human fielder would estimate likely impact point and move towards it, frequently updating his estimate. This is Michie's Solution 2, which he implies is the worst.

Yes, Professor Michie, computers are wonderful, but I wouldn't like to debug a program without a grounding in arithmetic!

DR ALAN BUTTLE
University of Exeter
Computer Unit

Computer Marketing
04026-3010
Working with and supported by
British manufacturers.

Newbury Labs low cost British made VDU. 7001-2 teletype replacement. 7004/5 sophisticated VDU with block mode trans. Full cursor control, data protect and highlighting. Delivery now from 6/8 weeks.
Prices from £575

MSI low cost British made range of cassette data recorders. Teletype compatible. High speed (2400 BPS) Standard serial interfaces. Remote operation.
Price £960

Mellectron M22 low cost British made Paper Tape Reader Punch. Reads to 150 C.P.S. Punches to 50 C.P.S. standard serial interfaces 5, 6, 8 level operation.
Price £960

Computer Marketing Ex 800 low cost high speed electro sensitive printer. 80 /40 or 20 characters per line. Upper and lower case. Up to 150 C.P.S. Standard serial interface.
Prices from £699

Ex 810 model 512 x 1n dot per sec plotter

DIGITAL Digital LA 36 DECwriter 30 C.P.S. RSR printer terminal. Ex Stock.
Price £1095

Full range of DIGITAL high speed printing terminals available

☐ New ASR LA38 DECwriter incorporating M22 reader punch. Price from £2195
☐ Digital LSI-11 processor modules and peripherals. Full range available Ex Stock. Less than manufacturers R.R.P. [illegible]

SEE US ON STAND C.25 AT COMPEC

Computer Marketing
641 London Road, West Thurrock, Essex
Tel: (04026) 3010 Telex: 896786

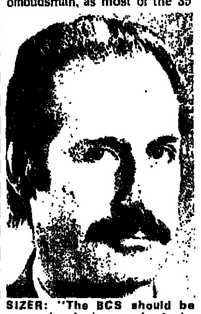
Not quite a hydra-headed ombudsman, the British Computer Society's professional panel advisory service is concerned with maintaining codes of practice — and the reconciliation of the great British public with the impact of the computer (usually unfortunate) on their lives. Report by JOHN KAVANAGH.

Trouble shooters for the BCS...

EVERY day the British Computer Society gets queries and pleas for help from members, non-members in the computer industry and from the general public. Most of the technical, membership and education queries are dealt with by BCS staff or by the chairman of the specialist groups, but the more unusual queries are passed on to the BCS's professional panel advisory service.

The panel and its advisory service were formed 18 months ago when the BCS decided it needed a panel of members to act as a sort of ombudsman, investigating complaints from the public about computer systems (CW, May 1, 1975).

The advisory service has not really turned out to be an ombudsman, as most of the 35



SIZER: "The BCS should be prepared to back a member in the courts."

cases it has investigated have involved complaints against, or queries from, BCS members.

Nevertheless, it is impossible to predict what is going to be in the service's in-tray at each of its meetings, which are held every six weeks or so.

The service's chairman, Dick Waller, commercial consultant for Computer Analysts and Programmers' MicroAde microcomputer software services, said 12 recent queries included two cases of misleading advertising, three complaints against contractors about alleged bad systems, three letters to the Press, one case of litigation between two companies, two cases of software copyright and, predictably, one complaint against the Driver and Vehicle Licensing Centre at Swansea.

"Most of the cases have no clear-cut solution," said Waller. "All we can do is to whittle away at them."

Software copyright is a particularly difficult problem to solve. "All we can say to members is 'protect your software by contract.' The growing hobby market increases the problem: you release a bit of software there and in a flash it's round 18,000 users."

The advisory service also has to help members who feel that adherence to the BCS codes of conduct and practice put them in conflict with their unions and employers.

Dick Sizer, from the Royal Aircraft Establishment at Farnborough, and Waller's vice-chairman, feels strongly on this: "In all cases of conflict with unions and management the member must decide for himself according to the code of the BCS. If he has difficulties because of this he should turn to the BCS. And the BCS should be prepared to back him in the courts, if it feels he acted honestly according the the codes. We are looking at a number of insurance schemes to cover these cases.

"One problem here is that computing is a young industry, and its members can be put under pressure. You don't get such pressures in established professions: after all, you wouldn't put pressure on an accountant or a solicitor. Management and unions must eventually recognise that they can't pressurise members of the computing profession."

Ignorance of computers is behind many of the cases which come before the advisory service. "The Daily Express ran a silly 'computer boobs again' story and we wrote to the journalist to try and educate him a little," said Waller. "We got a letter from a ratepayer complaining about the borough council wasting money on computing, so we got the data processing manager to give the person a tour of the installation."

"There's still great public ignorance," said Sizer. "If you complain about a bank error the clerk says, 'It's the computer, you know.'"

"The computer is the scapegoat for a plastic society," said Waller. "If there were no computers we'd have to invent another scapegoat." Sizer commented, "In the old days the bank clerk would say, 'It's head office, you know.'"

As well, as supporting members in matters of conflict, the advisory service investigates breaches of the code of conduct by members. The members talk to the person involved and may make recommendations to the BCS president. Breaches of the code are recognised as serious: "No organisation can be seen to be professional until it has a real disciplinary procedure," said Sizer.

The other members of the advisory service are Anthony Chandor, who has just joined Insac Data Systems from the National Computing Centre; David Coan from the NCC; Barry Jackson from Hawker Siddeley; Joe Kenny, a consultant; Phillip Maylor, who runs the TOPS training scheme

WALLER: "We wrote to the journalist to try and educate him a little..."

at the Training Service Agency; Steve Shirley, managing director of F International; and Miriam Stephenson, contracts manager at the Post Office's National Data Processing Service, who gives the advisory service legal advice.

All the members are on relevant BCS committees or boards, such as those dealing with privacy, education and the codes of conduct and practice.

The advisory service reports to the professional panel, which also oversees the code of conduct and code of practice committees. The professional panel, the communications panel and the technical panel all report to the technical board. The panels deal with much of the administrative matters, thus leaving the board to look at matters of policy.

Welsh schools' essay competition

SECONDARY school children in the Welsh county of Dyfed are being invited to write essays on information retrieval for a competition organised by Bryn Jones, who runs the county's educational computing centre.

The competition has attracted wide support from the computer industry, as shown by donations of prizes of £80 by Computer Weekly, £25 by Post Office Telecommunications, a trophy by IBM, seven calculators by Texas Instruments and seven books of computer games by Digital Equipment.

The competition is being judged by representatives from Post Office Telecommunications, the Central Electricity Generating Board and the Western Mail newspaper. There will be a winner from each secondary school and one overall winner. That essay will be published in Computer Weekly.

The competition is aimed at giving all pupils an equal chance, whatever their age and however limited their computing knowledge.

Closing date for entries is March 13, 1978, and the presentations will be made next May.

Further details can be had from Bryn Jones on Aberystwyth 3111.

Gobbledegook

WHEN I saw that Computer Weekly was to have articles on bubble memories and CCD memories I felt that at last I would be able to find out how it was done (CW, September 29). However, disappointment! Two mathematicians and two physicists have read and re-read the article on bubble memories and we still cannot sort it out.

The article on CCD memories was uncharitably described by a colleague as "gobbledegook". Some of the text is on a par with the worst jargon which the US can offer; eg paragraph 6.1 have heard some papers and articles described as intelligible only to those who do not have to read them. These two fall into this category.

Can I conclude with a plea? When you publish these supplements which can be very informative, have a "shop-floor worker" read through them first. They fail completely if they can be understood only by a small minority.

G. A. R. TAYLOR
Lecturer
Department of Chemistry,
Computing and Applied Sciences
Wolverhampton Polytechnic
Wulfruna Street
Wolverhampton
West Midlands

Royal finger on the button—and Swift is under way

A ROYAL finger on a golden button formally inaugurated the Swift interbank funds transfer network in Brussels last week. The finger was that of Prince Albert of Belgium, brother of King Baudouin; the golden button, on a VDU attached to the Swift network, triggered a fraternal greeting to each of the 430 banks in 14 European countries and in the US which are attached to the network.

"I, Albert, Prince of Belgium," said the message, "declare the Swift system officially open in the hope that this forward step in international communication will reflect itself in growing international understanding and co-operation throughout your membership and the world."

The Prince welcomed Swift to Brussels "not only as a company and an employer but as a symbol of international co operation. Swift enables small commercial banks to compete with the giant international banks, and anything which stimulates competition is all to the good."

SID suppliers' plans for next generation

One of the three approved Swift Interface Devices, SIDs, is the system based on the GA SPC 16/65 mini, seen here. GA says that 43 out of the 47 Swift member banks in Austria use the GA SID, as do all the Finnish banks, and 30 to 40 per cent of those in Benelux.

THE three approved Swift Interface Device, SID, suppliers revealed their plans for the next generation of hardware and software at the inauguration ceremonies.

Burroughs is to meet criticisms of the throughput capacity of the B7 SID by rewriting the interface software in the MPL 2 language of the B80-800-1800 compatible range of small systems, and hopes to get it approved by Swift in January. This will give users dramatically enhanced flexibility with a five to one power range of systems from which to choose.

Users will also be able to use B80s as terminals to B800 or B1800 SIDs and, provided the software operates satisfactorily, should enable the company to consolidate its position as leading SID supplier with 182 banks using the B7 SID.

ICL, which became an approved supplier when it acquired Singer's international operation, has a base of only 20 users to work from. It hopes that now the uncertainty over the future of the ICL 1500 SID is removed, it will get a much larger share of the next group of banks to join the network.

ICL's plans for the next generation are as radical as Burroughs, but less well-defined. Current intentions are to develop a new modular SID combining elements from both the 1500 and the 7502 terminal systems.

THE Swift management committee. Round the table left to right are: Eric O'Brien (services director), Soesi Kok (finance director), Carl Reuterskiold (general manager), Jacques Cerveau (operations director) and Jack Tilley (administration director).

ICL claims that although it has a small number of users, they do include the largest current user of the network, Société Générale of Belgium, which is currently generating about 10% of the total traffic on Swift.

The bank has two ICL SIDs, which are 1503 terminal systems adapted to be interrupt driven. The standard 1500 has only one programming level.

General Automation says that about 150 banks are using its SPC 16/65 SID and that its first priority is to get its software approved by Swift. It hopes that the process will be completed by the end of the year. It does not have any plans for a second generation at present, but is completing a portfolio of banking software, notably a foreign exchange package, which will run on any GA machine and be available to Swift and non-Swift users.

Leading non-approved interface supplier is **IBM**, which is estimated to have 20 users of its Direct Swift Link package on System 370 mainframes, and 25 to 30 users of the System 7 interface device.

Heading the list of specialist suppliers offering a Swift solution is UK systems house **Arbat**. Arbat has written Swift interface software to run under its AIMS operating system on DEC PDP-11 machines, and has aroused considerable interest among US banks dissatisfied with the preferred solutions (CW, June 30).

Arbat meets criticisms that Swift is excessively consumptive of machine capacity under its AIMS system by pointing out that Swift has to have absolute priority whatever the solution chosen. Arbat generally recommends customers to have one processor dedicated to Swift with a second running the other banking applications available under AIMS.

A Swift spokesman gave weight to Arbat's contention by pointing out Swift messages could equally monopolise an IBM 370/158 using the Direct Swift Link package.

For the future, Arbat is looking forward to the imminent launch from DEC of a 32-bit mini which will run the PDP-11 and hence Arbat's own software. The systems house is working on enhanced software designed to provide high efficiency with high volume Swift message traffic.

Datasaab has a couple of users for its D5 Swift interface, and **NCR** and **DEC** are preparing Swift solutions. DEC is said to be working on a system to run under RSX-11.

Traffic is only 10% of capacity

THE fact that the first phase of Swift was about a year late — only a year late, some would say — appears to have been of little concern to the majority of the member banks, many of which are still not ready to start using the network. The majority of those connected are not sending traffic, but simply "listening" for any messages sent to them, and traffic, at 30,000 messages a day, is only 10% of the capacity of the system. It is expected to reach 100% of capacity in 15 months' time.

Supplying all the switching computers and national concentrators plus software for the network has proved a somewhat expensive business for Burroughs, because it originally hoped to meet the Swift specification of 45,000 messages an hour on two B3700 mainframes in Holland and two in Belgium. These have now been replaced by the larger and more expensive B4800s, and Swift will only pay more for these than it contracted to pay for the 3700s if the capacity proves to be in excess of 45,000 messages an hour.

Burroughs has set up a separate subsidiary, headquartered in Brussels, to handle all its Swift business and claims that, despite this setback, the subsidiary is profitable when all the B7 SID business is included.

There are prospects for further business shortly, because a third switching centre is to be built somewhere in the US (the location has yet to be chosen) which will serve the Far East.

There are at present 430 banks and 804 destination addresses on the network, each capable of using the network rather than the mail service or telex for all their foreign exchange transactions with other member banks. There are 503 member banks at present, and by the end of next year, 800 are expected to be attached to Swift.

—Tim Palmer

the impact of electronics

A major international conference organised by Electronics Weekly.

Hilton Hotel, Park Lane, London. Thursday, December 8th, 1977

An opportunity to discover how developments in electronics will bring far-reaching changes to industry, commerce, leisure and society.

This major international conference is an attempt to create an awareness of what is happening in terms of the social and economic effects of the electronics revolution, which can only be minimised and turned to good account if all those concerned understand what is involved.

In a series of papers, leading figures in electronics from Britain and other countries will explain that while new technology may be disruptive, this can be lessened if long-term plans based on sound knowledge are made.

This conference can be your first step towards acquiring this knowledge—the key to choosing the right way ahead.

Subjects and speakers will include
The Impact of Electronics—Past, Present and Future, by Jack Akerman (Managing Director of Mullard Ltd., Chairman of the Electronic Component Industry Federation, and member of Electronics EDC).

The Impact of New Technology in Telecommunications, by Kenneth Corfield (Deputy Chairman and Managing Director of Standard Telephone and Cables Ltd., and Senior Officer of ITT in the United Kingdom).

The Microprocessor in the Home, by Dr Steve Furber (Managing Director of Cental Instruments Microelectronics Ltd since 1971 and has many years experience of the Semiconductor industry).

The Microcomputer in Industry and Commerce, by Alex d'Arcy-Irvine, OBE, (Chairman of Computer Analysts and Programmers Ltd).

The Impact of Microelectronics on Employment, by Dr Alfred Fromme (Vice President of Siemens A.G., West Germany, and head of sales and marketing in the company's components group).

Kenneth Corfield · Jack Akerman · Dr. Steve Furber · Gerry Jeffcut

Frank K. Chorley · Alex d'Arcy-Irvine · Derek Roberts

Lord Orr-Ewing, OBE, C.Eng. (Chairman of Ultra Electronics Ltd), Sir Leon Muckett, CB., OBE, FIS (Deputy Chairman of the National Electronics Council) and Lord Thorneycroft (Chairman of Pye of Cambridge Ltd) have all agreed to chair the sessions.

The concluding Open Forum will feature a panel of experts which will include William C. Hittinger (Executive Vice President, research and engineering, RCA Corporation USA), Gerry Jeffcut (Chairman and Managing Director of Plessey Industries UK), Derek Roberts (Chairman and Managing Director of Plessey Microsystems Division and Frank Chorley (Managing Director, Plessey Electronic Systems Ltd).

The conference commences at 9.30 am and finishes at 5.30pm.

The registration fee is £95 + VAT (£4.00 per delegate).

To the best of our knowledge, you will not be the only person interested in attending this conference. Please complete the coupon and send for further details.

Please complete in CAPITALS and send to: Conference Administrator, IPC Business and Industrial Training Ltd., Surrey House, Throwley Way, Sutton, Surrey SM1 4QQ. Telephone: 01-643 8040.
Please register ..... places for 'The Impact of Electronics' conference to be held at the London Hilton on Thursday, December 8th 1977.
The fee is £95 plus 8% VAT (£4.00) per delegate.
Name .....
Address .....
Company .....
Position .....

the impact of electronics
presented by
Electronics Weekly

LETTERS

Reserved category

IN his letter calling for "joiners" (CW, October 6), Neville Taylor, chairman of the Data Processing Management Association, perhaps rather unwisely used the description "practitioners" in his short list of suitable candidates for membership.

It should be made manifestly clear that the designation "Incorporated Data Processing Practitioner" is legally protected by the Institute of Data Processing for use by its own professional members, and IDP has made the "practitioner" its own particular field of recruitment since its inception in 1966.

DEREK BRADLEY
Secretary,
Institute of
Data Processing

Misleading comparison

YOUR article, "US government forecast of sales trends abroad" (CW, September 8), contains a warning about the use of market share figures. To emphasise the point you compare the US Commerce Department figures with those from IDC.

You state that the Commerce Department figures have IBM and ICL level pegging "in the region of 30 to 35% each", whereas you quote the IDC figures released earlier in the year as giving IBM 47.2% and ICL 26.5%.

It should be pointed out that the figures that you quote from the Commerce Department relate to the market in terms of numbers of installed systems and those quoted from IDC are in terms of installed base values. Similar figures from IDC released at the same time give IBM 33.0% and ICL 32.2% in terms of installed units.

P. ROWELL
IDC Europa Ltd
London

Integrity is the target

SO, we're still not sure whether computing is to be a profession (Computerview, October 6)? Despite the fact that we have patients in intensive care units relying on monitoring of vital signs by computer; and despite database systems containing the most sensitive of information; not to mention multi-million-pound manufacturing plants coming under computer control, and blind landing systems relying on computers for the safety of hundreds of passengers in wide-bodied jet aircraft?

Without professional standards of performance and ethics in computing, how are we to guarantee that these systems will perform satisfactorily, and what redress will we have when things go wrong?

The BCS has adopted a Code of Practice and a Code of Professional Conduct which require that its professional members pay due heed to matters of technical competence and ethical conduct in all that they do, and moreover can be held responsible for breaches of these codes.

The real problem is that the industry has not yet fully woken up to the extreme sensitivity, and need for reliability, in many of the systems which they operate. The day must surely come when users will need to be satisfied of the professional integrity of those responsible for systems being implemented on their behalf.

The BCS has made a worthwhile start in defining a framework in which its members may act to approach such integrity, and has moreover laid down a pattern of education to ensure that its professional members have appropriate skills and understanding to achieve it.

The sad thing is that the BCS does not yet have the benefit of the help and assistance of a great many already highly skilled professional practitioners, whose advice and backing could help to ensure the future respect of users for a strong and competent computer profession.

PETER M. HAINE
Senior Course Tutor in
Computer Science
Lancaster Polytechnic

Michie caught out?

I DON'T think one would lament the advent of the pocket calculator in the classroom (Letters, October 13), but it is distressing that otherwise intelligent children are frequently unable to perform simple arithmetic. The proponents of the modern approach to mathematics do not always appreciate that practising "long multiplication", etc gives children an appreciation of the properties of numbers without which an understanding of advanced concepts is impossible.

To illustrate; my son when eight years old was in tears because he was unable to split a batch of numbers into two sets, each containing a common factor. Given the example that 14, 24, 28, 36, 35, 18 could be split into 14, 28, 35 and 18, 24, 36 the book asked for the same procedure to be carried out on other groups of numbers. Easy? Yes, if you have been taught multiplication tables, but it appears that the "computers will do it all brigade" have somehow devalued basic arithmetic to the point where primary school teachers who may have specialised in English, or another non-mathematical subject, don't always see that arithmetic is the foundation of all mathematics.

Michie's Privateview (October 13) arguments leave a lot to be desired. He claims that children do not need to study Newtonian dynamics before learning to ride a bike. This, of course, is true on the conscious level, but who would claim that people move without an informal awareness of mechanical principles?

As far as robot cricketers are concerned, it must be a joy to watch Michie fielding if he always runs towards the ball performing a close approach to a parabolic curve. In fact, the human fielder would estimate likely impact point and move towards it, frequently updating his estimate. This is Michie's Solution 2, which he implies is the worst.

Yes, Professor Michie, computers are wonderful, but I wouldn't like to debug a program without a grounding in arithmetic!

DR ALAN BUTTLE
University of Exeter
Computer Unit

Computer Marketing
04026-3010
Working with and supported by
British manufacturers.

Newbury Labs low cost British made VDU. 7000/2 teletype replacement. 7004/5 sophisticated VDU with block mode trans. Full cursor control data protect and highlighting. Delivery now from 6/8 weeks. Prices from £575

MSI low cost British made range of cassette data recorders. Teletype compatible. High speed (2400 BPS) Standard serial interfaces. Remote operation Price £960

Intellect on M22 low cost British made Paper Tape Reader Punch. Reads to 150 CPS. Punches to 50 CPS, standard serial interfaces. 5, 6, 8 level operation Price £960

Computer Marketing EX800 low cost high speed electronic printer matrix 35, 40 or 20 characters per line. Upper and lower case. Up to 160 CPS standard serial interfaces Prices from £699

Ex 810 model 512 x 16 dot per sec. plotter

2650/60 Digital LA36 DECwriter 30 CPS KSR printer terminal. Ex Stock Price £1095

Full range of DIGITAL high speed printing terminals available.

☐ New ASR LA36 DECwriter incorporating M22 reader punch. Price from £2195
☐ Digital LSI-11 processor modules and peripherals. Full range available Ex Stock. Less than manufacturers R.R.P. Prices correct at time of publication

SEE US ON STAND C.25 AT COMPEC

Computer Marketing,
64 London Road, West Thurrock, Essex.
Tel: (04026) 3010 Telex: 896786.

Not quite a hydra-headed ombudsman, the British Computer Society's professional panel advisory service is concerned with maintaining codes of practice — and the reconciliation of the great British public with the impact of the computer (usually unfortunate) on their lives. Report by JOHN KAVANAGH.

Trouble shooters for the BCS...

EVERY day the British Computer Society gets queries and pleas for help from members, non-members in the computer industry and from the general public. Most of the technical, membership and education queries are dealt with by BCS staff or by the chairman of the specialist groups, but the more unusual queries are passed on to the BCS's professional panel advisory service.

The panel and its advisory service were formed 18 months ago when the BCS decided it needed a panel of members to act as a sort of ombudsman, investigating complaints from the public about computer systems (CW, May 1, 1975).

The advisory service has not really turned out to be an ombudsman, as most of the 35

SIZER: "The BCS should be prepared to back a member in the courts."

cases it has investigated have involved complaints against, or queries from, BCS members.

Nevertheless, it is impossible to predict what is going to be in the service's in-tray at each of its meetings, which are held every six weeks or so.

The service's chairman, Dick Waller, commercial consultant for Computer Analysts and Programmers' MicroAde microcomputer software services, said 12 recent queries included two cases of misleading advertising, three complaints against contractors about alleged bad systems, three letters to the Press, one case of litigation between two companies, two cases of software copyright and, predictably, one complaint against the Driver and Vehicle Licensing Centre at Swansea.

"Most of the cases have no clear-cut solution," said Waller. "All we can do is to whittle away at them."

Software copyright is a particularly difficult problem to solve. "All we can say to members is 'protect your software by contract.' The growing hobby market increases the problem: you release a bit of software there and in a flash it's round 18,000 users."

The advisory service also has to help members who feel that adherence to the BCS codes of conduct and practice put them in conflict with their unions and employers.

Dick Sizer, from the Royal Aircraft Establishment at Farnborough, and Waller's vice-chairman, feels strongly on this: "In all cases of conflict with unions and management the member must decide for himself according to the code of the BCS. If he has difficulties because of this he should turn to the BCS. And the BCS should be prepared to back him in the courts, if it feels he acted honestly according the the codes. We are looking at a number of insurance schemes to cover these cases.

"One problem here is that computing is a young industry, and its members can be put under pressure. You don't get such pressures in established professions: after all, you wouldn't put pressure on an accountant or a solicitor. Management and unions must eventually recognise that they can't pressurise members of the computing profession."

Ignorance of computers is behind many of the cases which come before the advisory service. "The Daily Express ran a silly 'computer boobs again' story and we wrote to the journalist to try and educate him a little," said Waller. "We got a letter from a ratepayer complaining about the borough council wasting money on computing, so we got the data processing manager to give the person a tour of the installation."

"There's still great public ignorance," said Sizer. "If you complain about a bank error the clerk says, 'It's the computer, you know.'"

"The computer is the scapegoat for a plastic society," said Waller. "If there were no computers we'd have to invent another scapegoat." Sizer commented. "In the old days the bank clerk would say, 'It's head office, you know.'"

As well as supporting members in matters of conflict, the advisory service investigates breaches of the code of conduct by members. The members talk to the person involved and may make recommendations to the BCS president. Breaches of the code are recognised as serious: "No organisation can be seen to be professional until it has a real disciplinary procedure," said Sizer.

The other members of the advisory service are Anthony Chandor, who has just joined Insac Data Systems from the National Computing Centre; David Coan from the NCC; Barry Jackson from Hawker Siddeley; Joe Kenny, a consultant; Phillip Maylor, who runs the TOPS training scheme

WALLER: "We wrote to the journalist to try and educate him a little..."

at the Training Service Agency; Steve Shirley, managing director of F International; and Miriam Stephenson, contracts manager at the Post Office's National Data Processing Service, who gives the advisory service legal advice.

All the members are on relevant BCS committees or boards, such as those dealing with privacy, education and the codes of conduct and practice.

The advisory service reports to the professional panel, which also oversees the code of conduct and code of practice committee. The professional panel, the communications panel and the technical panel all report to the technical board. The panels deal with much of the administrative matters, thus leaving the board to look at matters of policy.

Welsh schools' essay competition

SECONDARY school children in the Welsh county of Dyfed are being invited to write essays on information retrieval for a competition organised by Bryn Jones, who runs the county's educational computing centre.

The competition has attracted wide support from the computer industry, as shown by donations of prizes of £50 by Computer Weekly, £25 by Post Office Telecommunications, a trophy by IBM, seven calculators by Texas Instruments and seven books of computer games by Digital Equipment.

The competition is being judged by representatives from the Post Office Telecommunications, the Central Electricity Generating Board and the Western Mail newspaper. There will be a winner from each secondary school this year and one overall winner. That essay will be published in Computer Weekly.

The competition is aimed at giving all pupils an equal chance, whatever their age and however limited their computing knowledge.

Closing date for entries is March 13, 1978, and the presentations will be made next May.

Further details can be had from Bryn Jones on Haverfordwest 3181.

Gobbledegook

WHEN I saw that Computer Weekly was to have articles on bubble memories and CCD memories I felt that at last I would be able to find out how it was done (CW, September 29). However, disappointment! Two mathematicians and two physicists have read and re-read the article on bubble memories and we still cannot sort it out.

The article on CCD memories was uncharitably described by a colleague as "gobbledegook". Some of the text is on a par with the worst jargon which the US can offer, eg paragraph 6. I have heard some papers and articles described as intelligible only to those who do not have to read them. These two fall into this category.

Can I conclude with a plea? When you publish these supplements which can be very informative, have a "shop-floor worker" read through them first. They fail completely if they can be understood only by a small minority.

G. A. R. TAYLOR
Lecturer,
Department of Chemistry,
Computing and Applied
Sciences
Warley Technical College
West Midlands

Royal finger on the button—and Swift is under way

A ROYAL finger on a golden button formally inaugurated the Swift interbank funds transfer network in Brussels last week. The finger was that of Prince Albert of Belgium, brother of King Baudouin; the golden button, on a VDU attached to the Swift network, triggered a fraternal greeting to each of the 430 banks in 14 European countries and in the US which are attached to the network.

"I, Albert, Prince of Belgium," said the message, "declare the Swift system officially open in the hope that this forward step in international communication will reflect itself in growing international understanding and co-operation throughout your membership and the world."

The Prince welcomed Swift to Brussels "not only as a company and an employer but as a symbol of international co operation. Swift enables small commercial banks to compete with the giant internatio nal banks, and anything which stimulates competition is all to the good."

SID suppliers' plans for next generation

THE three approved Swift Interface Device, SID, suppliers revealed their plans for the next generation of hardware and software at the inauguration ceremonies.

Burroughs is to meet criticisms of the throughput capacity of the B7 SID by rewriting the interface software in the MPL 2 language of the B80-800-1800 compatible range of small systems, and hopes to get it approved by Swift in January. This will give users dramatically enhanced flexibility with a five to one power range of systems from which to choose.

Users will also be able to use B80s as terminals to B800 or B1800 SIDs and, provided the software operates satisfactorily, should enable the company to consolidate its position as leading SID supplier with 182 banks using the B7 SID.

ICL, which became an approved supplier when it acquired Singer's international operation, has a base of only 20 users to work from. It hopes that now the uncertainty over the future of the ICL 1500 SID is removed, it will get a much larger share of the next group of banks to join the network.

ICL's plans for the next generation are as radical as Burroughs, but less well-defined. Current intentions are to develop a new modular SID combining elements from both the 1500 and the 7502 terminal systems.

ICL claims that although it has a small number of users, they do include the largest current user of the network, Société Générale of Belgium, which is currently generating about 10% of the total traffic on Swift.

The bank has two ICL SIDs, which are 1503 terminal systems adapted to be interrupt driven. The standard 1500 has only one programming level.

General Automation says that about 150 banks are using its SPC 16/65 SID and that its first priority is to get its software approved by Swift. It hopes that the process will be completed by the end of the year. It does not have any plans for a second generation at present, but is completing a portfolio of banking software, notably a foreign exchange package, which will run on any GA machine and be available to Swift and non-Swift users.

Leading non-approved interface supplier is **IBM**, which is estimated to have 20 users of its Direct Swift Link package on System 370 mainframes, and 25 to 30 users of the System 7 interface device.

Heading the list of specialist suppliers offering a Swift solution is UK systems house **Arbat**. Arbat has written Swift interface software to run under its AIMS operating system on DEC PDP-11 machines, and has aroused considerable interest among US banks dissatisfied with the preferred solutions (CW, June 30).

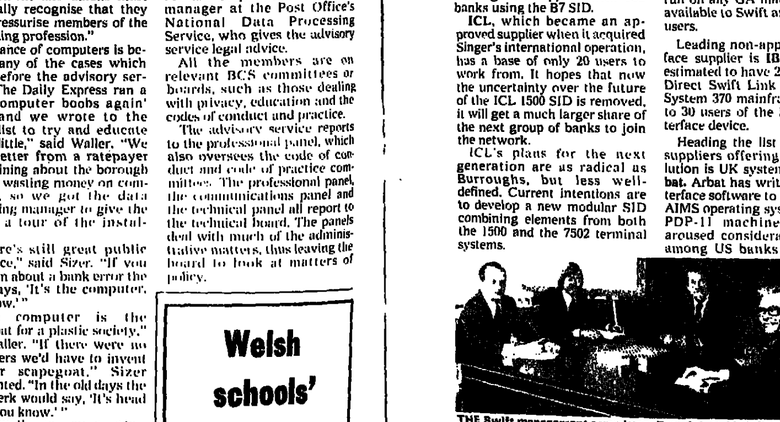
Arbat meets criticisms that Swift is excessively consumptive of machine capacity under its AIMS system by pointing out that Swift has to have absolute priority whatever the solution chosen. Arbat generally recommends customers to have one processor dedicated to Swift with a second running the other banking applications available under AIMS.

A Swift spokesman gave weight to Arbat's contention by pointing out Swift messages could equally monopolise an IBM 370/158 using the Direct Swift Link package.

For the future, Arbat is looking forward to the imminent launch from DEC of a 32-bit mini which will run the PDP-11 and hence Arbat's own software. The systems house is working on enhanced software designed to provide high efficiency with high volume Swift message traffic.

Datasaab has a couple of users for its D5 Swift interface, and **NCR** and DEC are preparing Swift solutions. DEC is said to be working on a system to run under RSX-11.

One of the three approved Swift Interface Devices, SIDs, is the system based on the GA SPC 16/65 mini, seen here. GA says that 43 out of the 47 Swift member banks in Austria use the GA SID, as do all the Finnish banks, and 30 to 40 per cent of those in Benelux.



THE Swift management committee. Round the table left to right are: Eric O'Brien (services director), Bessel Kok (finance director), Carl Reuterskiold (general manager), Jacques Cerveau (operations director) and Jack Tilley (administration director).

Traffic is only 10% of capacity

THE fact that the first phase of Swift was about a year late — only a year late, some would say — appears to have been of little concern to the majority of the member banks, many of which are still not ready to start using the network. The majority of those connected are not sending traffic, but simply "listening" for any messages sent to them, and traffic, at 30,000 messages a day, is only 10% of the capacity of the system. It is expected to reach 100% of capacity in 15 months' time.

Supplying all the switching computers and national concentrators plus software for the network has proved a somewhat expensive business for Burroughs, because it originally hoped to meet the Swift specification of 45,000 messages an hour on two B3700 mainframes in Holland and two in Belgium. These have now been replaced by the larger and more expensive B4800s, and Swift will only pay more for these than it contracted to pay for the 3700s if the capacity proves to be in excess of 45,000 messages an hour.

Burroughs has set up a separate subsidiary, headquartered in Brussels, to handle all its Swift business and claims that, despite this setback, the subsidiary is profitable when all the B7 SID business is included.

There are prospects for further business shortly, because a third switching centre is to be built somewhere in the US (the location has yet to be chosen) which will serve the Far East.

There are at present 430 banks and 804 destination addresses on the network, each capable of using the network rather than the mail service or telex for all their foreign exchange transactions with other member banks. There are 503 member banks at present, and by the end of next year, 800 are expected to be attached to Swift.

—Tim Palmer

the impact of electronics

A major international conference organised by Electronics Weekly.

Hilton Hotel, Park Lane, London. Thursday, December 8th, 1977

An opportunity to discover how developments in electronics will bring far-reaching changes to industry, commerce, leisure and society.

This major international conference is an attempt to create an awareness of what is happening in terms of the social and economic effects of the electronics revolution, which can only be minimised and turned to good account if all those concerned understand what is involved.

In a series of papers, leading figures in electronics from Britain and other countries will explain that while new technology may be disruptive, this can be lessened if long-term plans based on sound knowledge are made.

This conference can be your first step towards acquiring this knowledge—the key to choosing the right way ahead.

Subjects and speakers will include:

The Impact of Electronics—Past, Present and Future, by Jack Akerman (Managing Director of Mullard Ltd., Chairman of the Electronic Components Industry Federation, and member of Electronics EDC).

The Impact of New Technology in Telecommunications, by Kenneth Corfield (Deputy Chairman and Managing Director of Standard Telephone and Cables Ltd., and Senior Officer of ITT in the United Kingdom).

The Microprocessor in the Home, by Dr Steve Forte (Managing Director of Cartesal Instrument Microelectronics Ltd since 1971 and has many years experience of the Semiconductor industry).

The Microcomputer in Industry and Commerce, by Alex d'Agapeyeff, OBE, (Chairman of Computer Analysts and Programmers Ltd).

The Impact of Microelectronics on Employment, by Dr Alfred Prommer (Vice President of Siemens AG, West Germany, and head of sales and marketing in the company's components group).

Lord Cox-Ewing, OBE, C.Eng. (Chairman of Ultra Electronics Ltd); Sir Ieuan Maddock, CB, OBE, PRS (Deputy Chairman of the National Electronics Council) and Lord Thomeycroft (Chairman of Pye of Cambridge Ltd) have all agreed to chair the sessions.

The concluding Open Forum will feature a panel of experts which will include William C Hittinger (Executive Vice President, research and engineering, RCA Corporation USA), Gerrit Jeelof (Chairman and Managing Director of Philips Industries UK) Derek Roberts (Managing Director of Plessey Microsystems Division) and Frank Charley (Managing Director, Plessey Electronic Systems Ltd).

The conference commences at 9.00am and closes at 3.30pm.

The fee is £60 plus £9 VAT (£69) per delegate.

To reserve a place, write for further details or fill in the coupon below and return it to: Conference Administrator, IPC Business and Industrial Training Ltd., Surrey House, Throwley Way, Sutton, Surrey SM1 4QQ. Telephone: 01-643 8040.

Please reserve..... places for *The Impact of Electronics* conference to be held at the London Hilton on Thursday December 8th 1977.

The fee is £60 plus 8% VAT (£64.80) per delegate.

To be sure of reserving your seat at this exclusive conference complete the form on right.

the impact of electronics
presented by
Electronics Weekly

Please send confirmation of booking and invoice to:

Name .....
Job title .....
Company .....
Address .....
.....
Telephone .....

Tandy sets up first shop to sell minis off the counter

ANOTHER established US minicomputer manufacturer is moving towards the personal computing field, even if only indirectly. Computer Automation LSI 4/10 machines are now available over the counter in Fort Worth, Texas, from the first computer shop to be opened by Tandy Computers, a new division of the Tandy Corporation.

An initial order for five LSI 4/10s has been placed by Tandy with Computer Automation, and Tandy has been appointed CAI's sole retail outlet in the US. It is the only way that the computer will be available, as such, in single quantities, as CAI applies a minimum order quantity of five units. Tandy's retail price has been set at $795.

The new division of Tandy is something of an experiment for the corporation, best known for its worldwide chain of Hi-Fi retail shops. This sole outlet of Tandy Computers will perhaps be followed by others in the US if it is successful, and future plans incorporate a strong possibility of an extension of the division into the UK and Europe.

To back the LSI 4/10 product line, Tandy will also be selling its own TRS-80 microcomputer system (CW, August 25) plus equipment from various personal computing suppliers, such as, Imsai and Polymorphic Systems.

The company is also working on a packaged small business system based on the LSI 4/10, and a range of software for both the professional and hobby user is currently being developed.

Introduced earlier this year (CW, June 2), the LSI 4/10 is the smallest machine in Computer Automation's LSI 4 range. It is a 16-bit machine that is available as a "naked" board.

As an OEM item, it competes directly with the Data General Micro Nova and the Digital Equipment LSI-11 machines. Through Tandy, it is now in competition with the LSI-11 again, as this forms the heart of the H11 microcomputer from Heathkit (CW, July 21). Ironically, Heathkit is also best known for its work in Hi-Fi.

XPO-1 single board development system

ALL the basic functions of hardware and software assembly and debug for any of Rockwell's PPS 4/1, 4-bit microcomputers can now be performed on a new single board development system that has just been introduced.

Known as the XPO-1, the system is available in the UK from Rockwell's distributor, Polce, for £346.50. It consists of a 20-key keyboard incorporating four function and 16 hexadecimal keys, a five digit display that presents the data held at various address locations, a 1K by 8-bit RAM plus an additional socket for another similar device, and TTY interfacing circuitry for terminal I/O. All this is mounted on a printed circuit board measuring 7.5 by 12 inches.

The basic system includes one PPS 4/1 microcomputer containing and controlling the supervisory program. This can be replaced by an optional device running the appropriate assembler/line editor program, if required.

A development version of the PPS 4/1 is also required for the system. This is identical to the standard device, except that the internal ROM has been deleted, and the device wired to operate only from external memory. By plugging this into the system, prototype software performance can be evaluated.

Development circuits are available for all of Rockwell's seven micro-computer families, enabling the XPO-1 development system to be used for a variety of applications.

Britain's Premier Exhibition of COMPUTERS, PERIPHERALS, MICROPROCESSORS, TERMINALS AND SYSTEMS

COMPEC'77

Wembley Centre, London
November 8 to 10, 1977
10 am to 6 pm
(closing 4.30 pm on the last day)

The seventh year of this highly-successful specialised exhibition. An ideal opportunity to meet the suppliers of every kind of computer hardware and service.
Compec '77 is sponsored by the major specialist publications, "Computer Weekly" and "Data Processing", and is organised for them by Iliffe Promotions Ltd. All are members of IPC Business Press.
Registration at the door without an advance ticket costs £2.

Some of the firms you will meet:

Adler Business Systems
Alphameric Keyboards
Ampex G B.
A B H Applied Dynamics
Anderson Jacobson
Aspen Electronics
Bensen Electronics
BFI Electronics
Billing Machines (BML)
Borer Electronics
British Olivetti
Burst Data Systems
Calcomp Limited
Centronics Data Computer (UK)
Cifer Systems
Cola Electronics
Compelec Electronics
Computer Aided Systems
Computer Auxiliaries
Computer Automation
Computer Marketing
Computer Instrumentation
Computer & Systems Engineering
Computer Weekly
Computing
Control Data
C. P. Clare Electronics
C P.U. Computers
Cramer
Dawe of Reading
Decell Group
Dotec
Data 100 Systems
Data Design Techniques
Data Dynamics Limited
Data Dynamics Services
Data Electral
Dataplex
Data Products International
Data Processing
Data Recognition
Data Recording Instruments
Data Systems
Datem Electronics
Delta Data Systems
Diablo Systems
Diebil Electronics
Digico Computers
Digi-Data
Digital Equipment
Documation
DPA Limited
D.P. National Appliances
Dutilch LeMasne Corporation
L.P. Enterprises
Electronic Brokers
EMI Sowad 9 Vision
Eurocom Data
Exas Electronic Instruments
Exchange Telegraph
Fabri-Tek Computer Components
Feast-Aide
Fennell International Instruments
Feedback Data
Ferguson Computer Products
Garage Management Services
General Audio Data
Communications
Grenham Line
GEC Telecommunications
General Automation
Gfeller Electronics & Automation (UK)
GRT Automatic (UK)
Hamilton Avnada
Harris-Intertype
Haywood Electronic Associates
Hazeltine
Hewlett-Packard
Honeywell Information Systems
Imtec International
Inderam
Inforex
ITT Business Systems
Interex
Jeumpa Industries
Kenrick & Jefferson
K & N Electronics
Kode
Leigh Data Systems
Licon Electronics
Logabax
Lynwood Scientific Developments
Marcel Computer Services
Matthedata
Memorex UK
Micro Consultants
Microprocessors
Midleton
Mini Computers
Modular Technology
Nashua Computer Services
National Computing Centre
Newbury Laboratories
PAR Computers
Panasonic Systems Europe
Petrel
Penny & Giles Data Recorders
Pericon Data Systems
Peripheral Hardware
Perkin Elmer Data
Perone Peripheral Equipment
Philips Industries
Plessey Memorex
Plessey Telepaths
PMA Consultants
Potter Instrument Co.
Pragma
Prentice Hall
Prime Computers (UK)
Quest Automation
Racal-Milgo
Reis Terminals
Raytheon Cossore Dataprisms
Richard Horton
SE Labs (EMI)
Semaphore Computer Systems
Signal Electronics Systems
Sintrom Electronics
Smith & Nelson
South West Technical Products
Spacy Univac
Systems International
Systems Reliability
3M United Kingdom
Tally
Techas
Techelson
Tektronix (UK)
Telefile Computer Products
Teleprinter Equipment
Terminal Display Systems
Texas Instruments
Transdata
Triad
Trimster Systems
Ultronic Data Systems
Uniflex (UCSL)
Wang Electronics
Wesper
Westrex
Willis Computer Supplies
Wilson Computer
Zygal Dynamics

State of the mini-micro art surveyed

NEW users entering the microcomputer field have an overriding need for information on the beast, not only in terms of what is available, but also in terms of a general overview of its relevance and importance to their particular area of operations. With the pace of technological development in this area marching on unabated, even the experienced user of micros needs to stand back occasionally, so as to see the wood for the trees.

It is, therefore, interesting to see the latest book in the series "Current Aspects of Computer Technology", just published by Input Two-Nine.*

Compiled and edited by Alan Simpson, the book is entitled "Microcomputers: The mini-micro revolution", and it brings together not only the current state of play in the process of technological development, but also an examinations of its implications.

The industry view of the micro and where it is going is supplied by various companies operating in this field. There are contributions from the micro manufacturers, Intel and Zilog, while the software side is represented by Triad Computing Systems, Zeus-Hermes, Systime and CAP Microsoft. And to round things off, the view from either end of the microcomputer systems market is provided by Compelec and Philips Data Systems. Altogether, the eight provide an overview of the route the micro is following, and some of the problems that confront it.

To balance the industry view, the book also includes an examination of some of the social implications that the development of the micro has brought, and will bring in the future. These include the impact of the micro on the DP professional and mainframe development; the problems of training people for the growing computer future — especially at school level; and on how we should learn to make computers work for us rather than the other way round.

It is the third in a series of nine books, with future issues covering such subjects as small business systems; the future computerised society; data communications and security.

* Microcomputers, the mini-micro revolution. £9.95, PP 90, Input Two-Nine. 7 Banstead Road, Purley, Surrey CR2 3ER.

GIM offers 16-bit micro at 8-bit price

A LOW cost version of its CP 1600, 16-bit microprocessor has been introduced by General Instrument Microelectronics that is price competitive with 8-bit devices.

Aimed primarily at the growing consumer market for micros, the new CP1610 device is available, in quantities of 100, at a price of £6.75 each. Software compatible with the CP1500, it operates from a lower, 1.5MHz clock rate.

The device's 87 instruction set offers extensive interupt capabilities and an address capacity of up to 65K words of program and data memory.

Radio command puts Voyager 2 on course

TWIN US space probes, Voyager 1 and 2 are now collecting scientific data about interplanetary space on their long journey to outer planets Jupiter and Saturn, despite some problems with both craft.

Voyager 2, launched before Voyager 1, as it will take a longer route to the planets, first showed signs of trouble when a boom carrying scientific instruments failed to extend completely. This was followed by unexpected changes in the craft's attitude, a problem traced back to programming errors.

Each Voyager has three computers controlling main and sub-systems. Mission software can be re-programmed via radio command, and this technique was used to correct the attitude of Voyager 2.

Radio re-programming is a powerful tool in multi-planet missions of this nature as ground based controllers can design software around equipment failures to meet changing circumstances.

Most development work on the computers was carried out by General Electric, SCI Systems, Teledyne Microelectronics and Lockheed.

Voyager 1 will make its closest approach to Jupiter on March 5, 1979, before moving on to Saturn to be followed about four months later by Voyager 2, making its closest approach to Jupiter on July 9, 1979.

Government faith in 2900s

THE government was looking for more commitment from ICL in a number of areas as it firmly believed in the company's long-term future, said Reay Atkinson, director of the government's Central Computer Agency when speaking to the 2900 Club.

He added that ICL's profitability and export record and the fact that the government has 14 large 2900s and another 2976s on order are all testimonies to the company's viability.

The government wanted new developments at the top of the 2900 range and further development in communications. And it looked for satisfactory performances from the VME/B and VME/K operating systems. Further developments must involve a two pronged, co-operative approach from users and from ICL.

More support for Pascal

SUPPORT for Pascal as a real time language is growing.

The Swedish defence procurement agency, FMV, has specified a Pascal-based language as its standard for real time software development. Last month, the US Department of Defence also decided to go down the Pascal road for its Ironman project (CW, September 29).

The Swedish decision was taken over a year ago and UK consultancy SPL has now been sub-contracted by L. M. Ericsson to design the new Pascal-based language.

MoD policy appointment

A NEW assistant undersecretary concerned with computer policy has been appointed at the Ministry of Defence. He is Max Phillips, who previously dealt with public expenditure at the Treasury and before that was involved in management services at the Atomic Energy Authority at Aldermaston.

Phillips will be responsible for policy planning and for the financing and staffing of computer installations and projects for the ministry, the largest government user of computers.

He replaces John Sabatini, who has taken another post in the ministry as part of a reshuffle.

Maintenance ruling anger

WHILE NCR in the US is provoking angry reaction from users and computer brokers with a ruling that maintenance will not necessarily be continued on second-hand equipment, the UK office has indicated that no change is expected in this country.

If an NCR user in the UK sells his equipment to another user, NCR will examine the machine and give a quote for maintenance. The price would clearly depend on age and condition of the machine, said a spokesman. NCR would not refuse to maintain it, though the cost might be so high that the user would consider it uneconomic.

November conference

THE study group on computers in survey analysis is to hold a two-day conference on November 11 and 12 at the City University, London, on data structures for survey analysis.

The cost for the two days is £21, including lunch, and the conference will provide an in-depth and comprehensive review of the topic.

Further information from John Utting, National Children's Bureau, 8 Wakley St, London EC1V 7QE.

Amdahl record

THIRD quarter sales figures for Amdahl Corp were a record at $46,471,000, almost double last year's third quarter figure of $26 million, and 3% up on the second quarter of 1977. Profits in the third quarter were $13 million pre-tax, but as Amdahl has now used up all the tax credits it amassed during its start-up phase, after-tax profit is $6.4 million.

Fine gift

THE £100 fine levied by Coventry City FC on its skipper Terry Yorath will help to pay for an X-ray body scanner for a local hospital (CW, October 20). The Sky Blues decided at the start of this season that any club fines would go towards the £250,000 appeal fund for a scanner at the Walsgrave Hospital.

Cloud over IBS

A BLACK cloud hung over the final day of an otherwise successful International Business Show when a burst water main cut power supplies to the National Exhibition Centre, Birmingham. With a record 61,804 visitors, this was 58% more than of the 1976 British Efficiency Exhibition at Olympia.

Stake doubled

THE stake in Plessey held by Racal Electronics has been doubled, with the purchase of further shares in the market. Racal's stake in Plessey is now believed to be around 10%.

Welfare benefits volume

FULL technical and user documentation of the computerised welfare benefits information system developed by Edinburgh University, Inverclyde District Council and IBM (CW, April 22, 1976) is now available in a single volume.

The book includes background on UK welfare benefits, a detailed technical description of the programs, the costs and manpower associated with running the system and a guide for users.

The documentation is available for a small handling charge from David du Feu, Department of Social Administration, Edinburgh University, 7 Buccleuch Place, Edinburgh 8.

TV group uses NCR 280 ECRs

AN NCR point-of-sale system is being installed throughout the retail outlets of Vallances, the Leeds-based television and hi-fi specialists.

Valued at £200,000 the system will incorporate 45 NCR 280 electronic sales registers equipped with OCR scanners for data collection. Applications include hire purchase, short term credit, deposits, and TV rentals.

Data is collected on cassette and sent from the branches to the headquarters in Bramley, Leeds, for processing at the end of each day.

Supermarket order

SUPERMARKET group F. J. Wallis has placed an order for 110 DACAP Series 325 point-of-sale terminals from Transaction Data Systems

The terminals are to operate on a stand-alone basis initially, and each will be equipped with between five and six department totals, several media keys for differing forms of payment, and security features specially designed for Wallis.

Woolworth deal

F. W. WOOLWORTH has awarded the maintenance contract for its pilot stock control system project to Computer Field Maintenance, of Hitchin.

The first of the five systems in the project is due to be delivered to the Manchester store by Toltec Data later this year. Based on a Computer Automation processor, the system utilises a dual density floppy disc drive sub-system.

Sugar network

A DISTRIBUTED processing system has been ordered from Cara Data Processing of Dublin, by the Irish Sugar Company.

The £250,000 order includes 18 Datapoint 110 intelligent terminals and 10 Centronics printers. These will be installed at Irish Sugar factories in Carlow, Mallow, Thurles, Tuam, Midleton and Limerick, with three Datapoint 1100s, two printers and two magnetic tape units at the head office in Dublin.

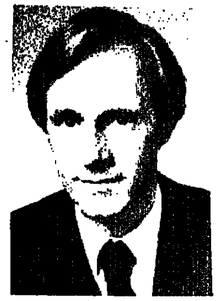
Service centre

AN engineering centre has been established at Hatton Cross by Systems Maintenance and Services to extend the company's activities into the refurbishing field. The centre will be able to overhaul any type of computer equipment with an average turnround time of one week.

Ribbon price cut

An average price cut of 20% has been announced by Stylo-graphic Services of Radlett, Herts, for its complete range of Diablo Printer ribbon cassettes.

Putting system terms into user language



In this second article of his series on DP/user communications, Nigel Laurie (right), outlines some of the problems that can arise, even when considerable care has been taken to provide information. The problem in this case was a difference in approach, the users saw the system from their point of view while the "guide book" had been produced by systems people and gave "systems" answers.

A DP manager recently described an end user problem which is not uncommon. The users were bothering his analysts with frequent queries about the new retrieval system. The interest was welcome — but also distrubing. There was a "User Guide" and the user phone calls took analysts away from their jobs. Good though contacts were for user relations, the drain on analyst time was high.

The system was an in-house showpiece. It met a long standing need. The user guide — the "Blue Book" — was impressive. It was complete. It had been a labour of love. It weighed in at three and a half pounds. And it was of very little use.

When the DP manager had his top analyst study the problem he learnt the following:

● **The Blue Book was well written.** Layout was simple, the style direct and the graphics helpful and clear. Jargon was defined and the table of contents explained the book's structure well.

● **The Blue Book stored data but not information.** Users agreed it was complete and up to date. But they argued it did not answer their questions. They said it was written from the designer's viewpoint — not the user's. Since it was not useful, they did not use it.

● **User queries were always put in user terms.** They arose "in flight". They tended to be forward-looking, reflecting the users' keen drive to exploit the system more fully. And since users knew only what they wanted and not how to achieve it, they did not express their needs in system terms.

● **The Blue Book put everything in system terms.** It did not tie system functions to user needs but left it to users to make the connections. This they could do only by reading through the book until they found the functions which seemed to fit. Since it is always easier to ask an expert you know, users naturally phoned an analyst. Hence the constant interruptions.

Clearly DP communication skills were not lacking. User readiness to put queries confirmed the good relations. The problem of usability arose because the initial communication objective had been unsound. It had been to give users a "complete account" of the system. DP staff now recognised that they should have set out to give a "user oriented" account of the system, one which presented the system in terms users could relate to their tasks.

But should the Blue Book be written again? The system would soon be growing to meet the needs and rewriting the whole book would be an immense task. The DP manager decided to exploit his strengths instead of struggling with a weak area.

Noting that users liked to talk over their systems needs — and that this helped analysts grasp user problems — he determined to manage the personal communication.

He set up an inquiry desk, staffed by a system expert with acknowledged user handling skills. This freed other analysts from interruption. It put the communication flair of one analyst in a place where it could do most for DP and for the users. And it meant that user queries could be analysed without the need for several analysts to compare hastily scribbled notes.

Growing demand for DP managers

DEMAND for computer managers is growing far faster than demand for other types of executives apart from those in personnel, according to a survey by the consultancy MSL of job advertisements in leading newspapers.

Demand for computer managers increased by 24% between the second and third quarters of this year, and although demand for personnel managers rose by 42% the other closest categories were accounting with only seven per cent, research and development with six per cent and sales with five per cent. Demand for production managers went down by 14%.

The number of advertisements for DP managers was 492 in the third quarter, compared with 11,038 for production managers, 996 for sales managers, 899 for accountants, 888 for research and development managers and 466 for personnel managers.

WHAT'S YOUR JOB?

A BOOK* which marks a big step towards more meaningful and less ambiguous job titles has been produced by the National Computing Centre. Called Job Descriptions in Data Processing, the book is aimed at helping computer managers prepare job descriptions and advertisements and carry out job evaluations.

The book, believed to be the first major work on the topic since a Ministry of Technology booklet 10 years ago, lists 300 tasks and gives suggested groupings of these tasks under job headings such as programmer and systems analyst and more recent job titles of database manager and network co-ordinator. The NCC says that even the terms programmer and analyst are open to individual interpretation.

A lot of the input for the book has come from a survey of 460 job descriptions in 50 organisations.

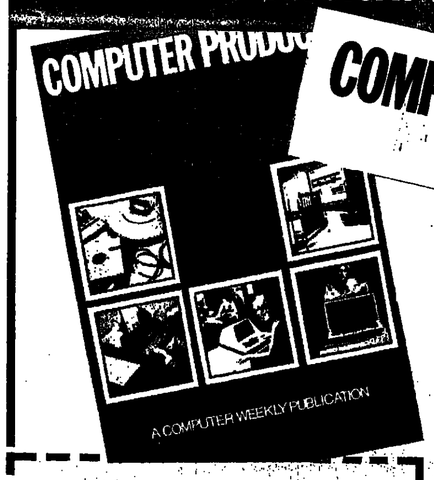
***Job Descriptions in Data Processing, by P. Hanna. 100 pp. £9 plus 50p postage. J. M. Dent & Sons (Distribution), Dunhams Lane, Letchworth, Herts, or from technical book shops.**

For all risks

SPECIAL insurance for computers is now being handled by the new machinery and construction division of underwriter Trident General. The division offers cover for all risks of hardware damage and breakdown, business interruption and professional indemnity in one document. It has produced a special booklet on computer insurance for users.

Trident General has offices in Birmingham, Bristol, Glasgow, Colchester, Leeds, Leicester, London and Manchester.

As of September there's just one way to reach the booming computer markets of Western Europe . . .



COMPUTER PRODUCTS

Have you seen Computer Products International?

50,000 computer people throughout Europe have seen this new publication. And they like what they see.

Produced by the same team which has made Computer Weekly International Europe's most widely read computer newspaper, COMPUTER PRODUCTS INTERNATIONAL brings news of the latest hardware and software products, whatever their country of origin, to an audience of computer executives throughout Europe.

At least 50% of every issue consists of product information, but there is also a News Review, an OEM section, and a product survey — in October, floppy disc drives.

The first issue, published in September has generated more than 2,500 enquiries so far, and they're still rolling in.

Now the October issue is out, so why not find out whether you qualify for readership? Just fill in the coupon and return it to:

COMPUTER PRODUCTS INTERNATIONAL
Room 125, Dorset House
Stamford Street, London SE1 England

I should like to receive Computer Products International ten times a year free of charge. Please send me a descriptive brochure and a readership application card.

I am responsible for specifying and/or purchasing computer equipment in my organisation.

Signature .....

NAME .....

JOB TITLE .....

COMPANY NAME & ADDRESS .....

COUNTRY .....

Making modern office fit for staff

Chairman of Wright Air Conditioning, George Wright is a trained engineer, and has been in the refrigeration and air conditioning industry since 1951. For the past 13 years he has specialised in the design of air conditioning equipment for computer rooms, and in 1973 he formed his present company. It offers a nationwide design, contracting and installation service, with centres in Glasgow, Birmingham and London.

By George Wright

TODAY'S modern office is not complete without the aid of the business machine. This varies from the simplest electric typewriter to the complex mainframe computer. Neither the typewriter nor the mainframe computer create problems in the normal office environment, because the heat generated by the typewriter is small, and the large computer will already be served by a purpose-designed environmental control system, and other external services.

However, such items as visual display units, terminals, card punches, keytape encoders, micro, mini and small business systems do give off considerable heat and, especially when used in large numbers, can and do give rise to environment problems. The style of equipment mentioned above can operate reliably in normal office conditions and it is not, therefore, usual to make special provision for environmental needs.

For the reasonable comfort of operating staff, the room temperature should be between 68°F and 75°F, with the humidity level between 40% and 60%. Most of the business machines which do not require special conditions vary in their operational limits, but could well lose reliability if the temperature range goes beyond the bounds of 60°F to 90°F, or humidities of 35% and 60%. It is probable that in offices where a number of small business machines are being installed, the above conditions would not prevail. The number of circumstances where these machines are installed vary widely and to illustrate what might happen, here is a possible example:

Our office is located in a multi-storey building with occupied accommodation above and below. We have one external wall which faces west. The office is 20 feet long and 15 feet wide and the window area is 50% of the external wall. We have six small machines which between them liberate 3kw of heat. We have no air conditioning or ventilation provided in the building.

The varying effect of outside weather conditions and the build-up of heat inside the room due to sun, occupancy and equipment would give results as shown in Table 1.

There would, of course, be some liberation of internal heat to outside but the time lag, due to building construction, would cancel out this effect to a great extent.

All three ambient conditions are typical throughout a summer's day. It can be seen that the conditions would be impossible for staff to work in, and probably highly detrimental to machine efficiency. In this particular example, the only satisfactory solution would be to install a small packaged air conditioning unit. Ventilation would serve no real purpose as the amount of relatively warm air required to keep the office at an acceptable condition would be enormous.

The problem that the user of the small machine has to decide is when and what environmental treatment is required. The answer to this problem is to call in a competent air conditioning engineer or consultant to advise. The solution to the problem could be a simple air extract fan or full air conditioning, depending on the scale of the problem. A rule of thumb here would be that offices with an installed machine load of less than 4 watts per sq ft could be catered for by a ventilation system, using ducting and outside air and those with loads in excess of this would require full air conditioning with mechanical refrigeration.

When designing the layout of the machine room, it is as well to position the equipment as far apart as is practicable from the operational point of view, to ensure that hot spots, caused by high machine density, can be eliminated.

If full air conditioning is needed, it is advisable to specify precisely the temperature and humidity limits for the room, and to equate the air filtration standards to the machine requirement and the building locality. Ideally, for comfort and maximum machine efficiency, the temperature should be 72°F ± 2°F, relative humidity 50% ± 5% and filtration to 95% at 5 micron particle size.

Care should be exercised by users already housed in air conditioned offices when installing these machines, as the design of the building's air conditioning system will not have taken into account the large additional heat sources of business machines.

Office air conditioning allows for heat gains due to transmission through the building fabric, solar radiation, lighting and occupants but not normally for business machines. The solution here would be to add a packaged air conditioner to boost the available cooling.

A number of small business machines installed in a large office can also give rise to the physical problem of installing the necessary electric wiring for them. Chases in the floors are often costly, disruptive and sometimes not possible because of floor construction and building owner's permission. In such cases, consideration should be given to installing a modular suspended false floor. These floors are available with floor tiles of 600mm square, which are easily removable.

The cables can then be carried in the floor void and allow for simple wiring if a machine is to be removed, repositioned or added. If a modular floor is used the void can be utilised to distribute the air from the air conditioning unit.

Looking into the future, with the enormous growth of mini and micro computers, one can visualise large office complexes filled with machines. Care should be taken when planning such a complex, that the environment can be adequately catered for. One would like to see these complexes having provision made at the design stage for the future possible office requirements.

These would include: central fan system to provide the necessary fresh air for ventilation purposes and maintenance of constant room humidity; piped cooling water supply to each floor to allow for heat dissipation from air conditioning units to be rejected to the outside; modular false floors throughout; realistically sized electrical distribution boards at each floor; and adequately sized goods lifts to enable equipment to be easily moved to its location without damaging walls, staircases and other fixtures.

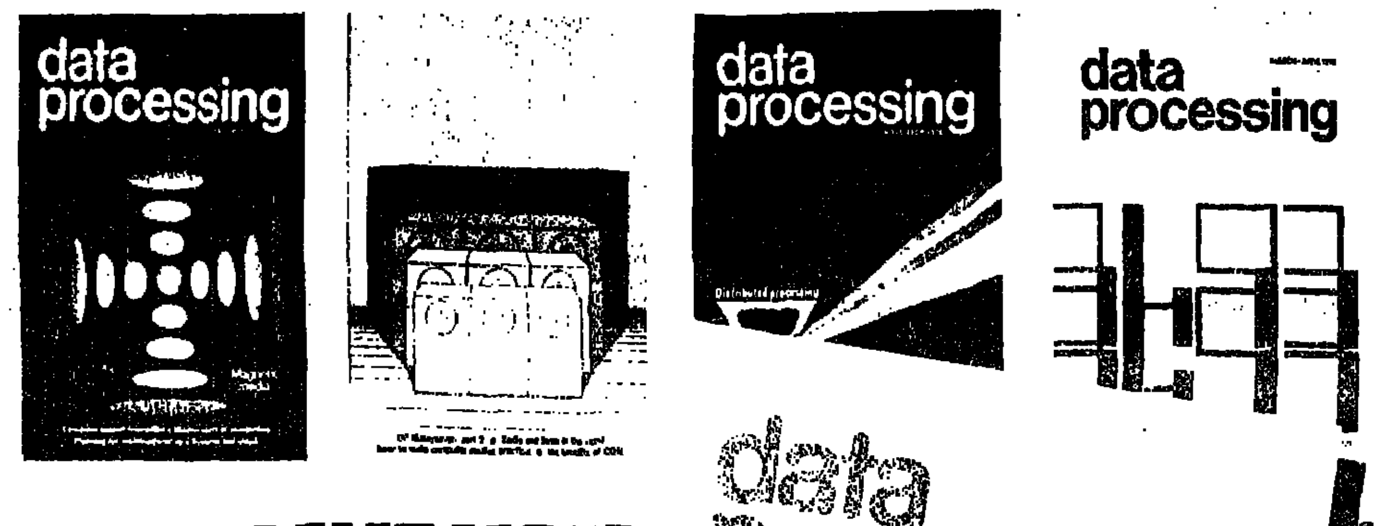
This approach would allow for flexibility and growth as the complex grows and would minimise the cost of the initial installation.

An indication of the costs involved in providing the above described services is: Full air conditioning, £600 per kilowatt of installed business machine with a minimum unit cost of approximately £800; and false floors, £30 per square metre.

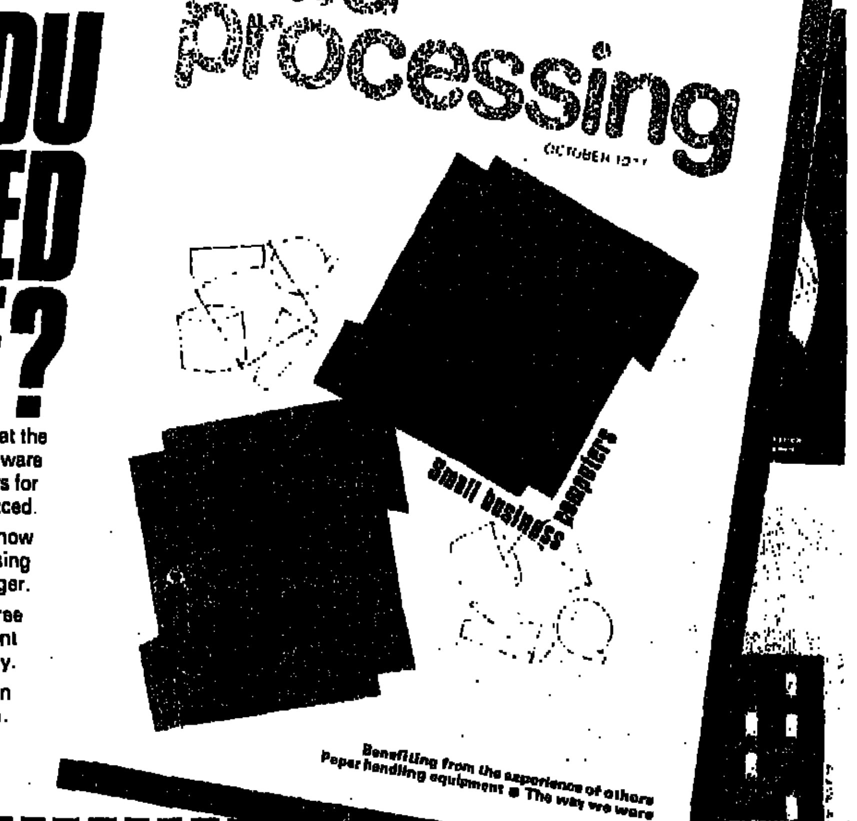
It only remains to wish you happy business machining in a good environment.

Table 1

	Temp °F	Hum %RH	Temp °F	Hum %RH	Temp °F	Hum %RH
Outside condition	70	50	75	50	80	40
Resultant room condition	120	12	125	12	130	8



HAVE YOU CONSIDERED THIS ISSUE?



Small business computers: not only do we look at the hardware on the market, we also show that software ignorance is *not* bliss, and provide some pointers for company "discipline" when a computer is introduced.

Paper handling equipment: an expert demonstrates how the right machinery can benefit the data processing manager.

Learn from the experiences of others: we select three widely differing uses of computers for the entertainment of all, and the enlightenment of many.

Those are just three of the vital features to be found in the October issue of DATA PROCESSING.

Add to this pages of products, concentrating this month on small business computers and paper handling equipment; the microprocessing scene; information for first time users, a round-up of the latest news in convenient form — and you begin to understand why DATA PROCESSING is essential reading for dp managers, chief accountants and management services directors.

All this, and much more, is packed into the October issue alone.

Can you afford not to subscribe to DATA PROCESSING? — It costs just £15 a year (overseas £18) for 10 issues, all just as full of articles and information essential to anyone involved in dp management.

To subscribe, simply complete and return the order form below, to:
ROOM 218, DORSET HOUSE
STAMFORD STREET, LONDON, SE1 9LU

Data Processing Subscription Order Form

Please enter my subscription to Data Processing starting with the current issue. I enclose remittance value £15.00.

CHEQUES/P.O.S SHOULD BE MADE PAYABLE TO IPC BUSINESS PRESS LTD

Name ....

Address ....

DP/3/77

NORTHERN APPOINTMENTS

Live in the Dales, work in towns... it all points North

By D. Fisher

THERE are two sides to recruitment: on the one hand the employer and on the other the employee. As with the old saying: 'One man's meat is another man's poison', so the problem from the employer's side is almost always the opportunity from the employee's side. More of that later. First let us look at the North of England and examine the geographical situation of the area involved.

The North of England covers a very wide area with a mixture of industry, agriculture and moorland and the 'perfect' person for the ideal job will not necessarily be situated in the right area. Someone located in Newcastle will not be able to travel to work in Manchester every day. Average journey times to and from work within the area loosely defined above are probably only 20 to 25 minutes, i.e. the majority of people working in Bradford live within ten miles of the centre of Bradford.

What makes the area so attractive is that it is relatively easy to live in a rural area and commute to reasonably large industrial centres. The most startling example of this is the North-East where it is possible to live within 30 minutes' drive of the Yorkshire Dales and North Yorkshire Moors and yet be within half an hour's travel of Newcastle, Durham, Tyne Tees etc.

The purpose of this article is to look specifically at recruitment within the computer industry and, as most people reading Computer Weekly will be aware, it is an industry with a very high proportion of specialist staff, the usual ones being operators, programmers, programmer/analysts, analysts, project leaders and supervisors and DP managers. This is made even worse by the fact that a very good programmer with first class knowledge of, say, IBM Cobol and Assembler cannot readily transfer to an ICL installation using Cobol and Plan. Alternatively a good application programmer will not necessarily be suitable for software programming work.

Now surely one might say that if a person has mastered a particular language then it cannot be too difficult to train him in a second language. Unfortunately, this approach not only increases "lead time" to productive programming but it also means that the employer has an unknown quantity, i.e. an efficient RPG II programmer does not necessarily make an efficient PL/I programmer.

There is also the problem of internal politics to be considered in this situation, where people in an installation who are already proficient in the language in use see a person joining them at the same salary who then has to be trained to come to their standards.

Training for a graduate or other suitable person would probably be ideal in an environment where the staff requirement was able to be predicted four to six months ahead to allow for recruitment and training. However, the majority of vacancies arise because of promotion or a person leaving necessitating an urgent replacement.

So although from an employer's point of view training would be the easiest, it is very often impractical because of the time scale involved.

From the employee's point of view, it provides him or her with an additional area of expertise which will probably increase his market value. Therefore, the employer doing the training has got an even harder task of keeping his specialist staff.

The applicant must for his part decide what expertise he needs to add to his existing experience and then read job advertisements to find a position suited to his requirements. Registering with a specialist recruitment company will afford him a good opportunity of finding the 'ideal job, as a good agency will take as much interest in the applicant's requirements as it will those of the client, simply because what is good for one is good for the other.

He will be interviewed by the agency consultancy staff who, because of their knowledge of the market, will be able to advise on his chances of getting what he is looking for, the likely time scale and the sort of salary he can expect. This method of working will reduce the number of interviews the applicant needs to attend to find suitable work and minimise the risk of accepting the wrong job.

One other advantage is that for an applicant to reply to an advertisement he will only have the specific details laid down, he will not be aware of any flexibility the prospective employer will have within his requirement, either by way of expertise or salary. An agency is usually aware of these details and can more accurately measure the applicant's chances of success.

Turning to the other side of the coin we look at the employer. In the past there has been a tendency for employers to pay more and more for the expertise they require, due to the shortage of supply. However, the market has somewhat changed in the past few years. Whether this is due to the government pay policy or to a better ratio of demand to supply is uncertain, but what is certain is that DP managers, who at one time were being tempted with offers of high proportion show an average annual increase in salary over the past few years of less than 11%. This includes the high inflation years and would suggest that more people want to be DP managers than there are opportunities.

However, computer operators show a much greater increase in the same period, and the percentage increase is somewhere near twice of the DP manager. Systems analysts and programmers have probably just about kept pace with inflation.

I believe that this situation has been brought about by the number of people available increasing in proportion to the number of opportunities. The exceptions to this are probably in the area of the more unusual installation and technological advance, where the demand suddenly moves from nil to 100 units while the supply moves from nil to 10 units. Database and real time installations are probably the best examples of this problem.

It is, therefore, clear to see that from the employer's point of view, although in some areas of specialist installations the problems of finding suitable staff are very little better than they were during the 1960s, generally speaking, the situation has improved substantially.

Two methods of recruitment are basically used, direct advertising in local or trade press, and recruitment agency or consultancy services. There are benefits to both systems from an employer's point of view.

A single advertisement, if several people are required, may attract all of them, thus minimising the external cost of recruitment. However, if it does not there will be a need for further advertising, interviewing unsuitable applicants and an increase in 'lead time' causing subtantial inconvenience to all concerned, most of all to the DP manager and his staff.

The service offered by a good specialist recruitment company will assist the client in several areas:

1. It will ensure that every applicant is interviewed before being sent out to a client. The purpose of this is to ensure that the applicant is likely to meet the client's requirements in personality as well as technical expertise.

2. CVs will be forwarded prior to the interview and when requested before a decision to interview is made.

3. In many cases advertising will not be necessary as some of the people already on the agency records will be suitable. This can greatly reduce the lead time to an appointment.

4. The client will interview fewer people, reducing time-wasting and the risk of not selecting the right one.

5. An agency can select a person who, though not the perfect applicant, is likely to meet the main requirements of the client. This person might not have responded to an advertisement for the same position.

From the employer's point of view, what is the perfect situation? Well, whatever method of recruitment he may settle for, the ideal is that there should be one applicant, meeting all the employer's requirements, including technical expertise, salary requirement, and the fact that the development which he is likely to get in that installation is exactly what *he* requires.

This is of course the employer's *dream* and in no way is it realistic. What is more likely to happen is that whatever method of recruitment is used, three or four people per vacancy will be interviewed. What is also likely to happen is that someone near to the perfect applicant will be accepted as the best available, and in-house efforts will be made to adjust his knowledge to suit his new employer.

One final point is that a larger installation can suffer through frequent advertising, as it creates the impression of a company with a staff problem. An agency continuously advertising becomes known and will therefore benefit.

The shortage of qualified computer staff is a problem familiar to most, if not all, computer users. Even where an installion is well staffed, the mobility of personnel is such that there is always a lurking fear that key people may be persuaded to move, changing the situation overnight.

In these circumstances recruiting — and keeping — suitable staff poses particular problems. For example, how does the user set out to attract staff; how does he get the most out of his advertising; how does he manage the selection process; should he use a recruitment agency; and is the use of contract staff a viable solution?

All these questions will be addressed at a seminar, sponsored by Computer Weekly, to be held at the Cafe Royal, London on Thursday, January 19, 1978.

Entitled "Solving the computer staff problem" the seminar will set out to indicate what the computer user should do in order to formulate and implement a successful recruitment policy. If you want to know more, contact Chris Hipwell, Room 125, Dorset House, Stamford Street, London SE1 9LU.

QUADRANT RECRUITMENT

ON THE MOVE

Then Quadrant can help. Our Manchester and Sheffield offices have details of many exciting opportunities for:

Programmers — COBOL, PL/1, RPG, PLAN, MINIS, ETC.	**to £6,000**
Software Programmers	**to £7,000**
Analysts and Analyst/Programmers	**to £7,000**
Sales People	**to £14,000**

Vacancies exist in most parts of the country, particularly in the North.

Interviews will be held in Manchester, Sheffield, London and Midlands. Please telephone the office nearest you to arrange the next step.

Ashley House, Ashley Road
Altrincham WA14 2DB
Tel. 061-928 8302

Bank House, Queen Street
Sheffield S1 1UF
Tel. Sheffield (0742) 738794

BERTRAM COMPUTER DIVISION

THE EXPERTS IN COMPUTER RECRUITMENT IN THE NORTH

LEEDS-LEEDS-LEEDS

£4,500 SYSTEMS ANALYST
2 yrs. exp. Able to work as part of team or independently. Familiar with ICL equipment. Real-time system 2903/E.D.S. 30's and remote/Local VT network

£4,000+ SENIOR PROGRAMMER
Burroughs COBOL. 2/3 yrs. exp. Excellent prospects in large company/medium size installations

£4,500+ ANALYST/PROGRAMMER
2 yrs. exp. IBM 370/140 DOS/VS. Excellent opportunities in engineering Company

£4,000 PROGRAMMER (COBOL)
IBM installation. Expanding and enhancing technical applications. Interesting work.

£3,888 PROGRAMMER (COBOL)
ICL installation. Must be conversant with ICL COBOL batch. Chance to move into systems

£4,300/£4,800 SYSTEMS ANALYST
HND Computer Studies, with 2/3 years exp. IBM COBOL. Prefer CICS knowledge

£3,500 PROGRAMMER/ANALYST
COBOL. IBM 370 DOS/VS. Exp. of CICS is preferred but not essential. Good prospects to move into systems. Graduate preferred

£3,500+bonus+comm. COBOL/PLI/ASSEMBLER PROGRAMMER
For software house. Must be of smart appearance. Customer liaison

£3,300/£3,500 PROGRAMMER
COBOL. ICL 1902S up grading to 2904. 2/3 yrs. experience. Good prospects

£3,700+ PROGRAMMER
1900 series. ICL COBOL. 2 yrs. exp. Move into systems

£3/£5,000 PROGRAMMER
COBOL. PLAN useful. ICL running under George II. Good prospects. Sheffield

£4,000/£4,500+car FIELD SERVICE ENGINEER
IBM SELECTRIC. VDU or high speed exp. Area Midlands and North. Good pension scheme.

PLEASE RING OR CALL IN
73/75 ALBION STREET, LEEDS
TEL: 0532 36622

MANCHESTER-MANCHESTER

£3,705 COMPUTER OPERATOR
ICL 1900 George II upgraded to IBM. Excellent prospects.

£3,000 JUNIOR PROGRAMMER
Prefer ONC Electronics and 2 yrs. ASSEMBLER or COBOL exp

£4,000 ANALYST/PROGRAMMER
2 yrs. exp. COBOL on line to Honeywell 66/40. Moving on to real-time.

£4,874 SYSTEMS ANALYST
IBM 360/50 using ENVIRON I as data base. 2 yrs. systems experience.

£4,500 PROGRAMMER
IBM 360/30 DOSVS. PLI main language + RPG II. Excellent prospects.

PLEASE RING OR CALL IN:
55 PRINCESS STREET, MANCHESTER 2
TEL: 061-236 4593

Also our Birmingham office

111 NEW STREET
BIRMINGHAM 2
TEL: 021-643 4433

IF YOU WISH TO DISCUSS ANY OF THE ABOVE VACANCIES, INTERVIEWING CAN BE ARRANGED ANY EVENING UP TO 8.00pm or SATURDAY MORNING. WE ARE HERE TO HELP YOU SELECT THE RIGHT MOVE:

BOROUGH OF HYNDBURN

Borough Treasurer's Department

COMPUTER PROGRAMMER

AP.2/3 £2529-£3252 + £312 salary supplement, + phase 2 supplement

The Council operate an ICL 1901A with tapes and discs. Candidates must be experienced in COBOL.

Assistance will be provided with removal expenses, and provision of housing accommodation, in approved cases.

Application forms and job descriptions available from the Personnel Officer, Town Clerk's Department, Municipal Offices, St. James Street, Accrington, Lancs. BB5 1PQ, to whom they should be returned not later than 7th November, 1977. Tel. 143.

Canvassing of Elected Members of the Council will automatically disqualify.

A Career in Computers in the North & Midlands

PROGRAMMERS & ANALYST PROGRAMMERS to £5750 + expenses

GENERAL MANAGEMENT

SENIOR PROGRAMMER/ANALYST · SENIOR ANALYST · CONSULTANT · S&P PROJECT MANAGER

ANALYST · SENIOR PROGRAMMER

The Fraser Williams Group represents an exceptional opportunity to join and progress in the software industry

We are a well established company with an impressive record of growth. Our turnover has increased by 50% in the last year, and it is planned to continue expanding at this rate.
We therefore need good quality people to help with this expansion. It is group policy to promote from within the company wherever possible and excellent opportunities exist for promotion to senior positions. The work is varied, assignments cover a wide range of main frame and mini-computer equipment both in the U.K., and overseas.
As well as an attractive salary we operate a profit sharing scheme which is paid half yearly and is based on an individuals own ability. We offer mileage expenses which make a significant contribution to the cost of running a private car.
If you are confident you are the kind of person we require contact your nearest Fraser Williams office now!

Manchester
J.E. Kinder, Fraser Williams (Manchester) Ltd., Warwickgate House, Warwick Road, Manchester M16 0QQ. Tel: 061-872 8428.

Liverpool
B. Merchant, Fraser Williams & Co Ltd., 3rd Floor, Port of Liverpool Building, Pier Head, Liverpool 3. Tel: 061-227 3371.

Birmingham
A. Dowman, Fraser Williams (Midlands) Ltd., 10/11 Greenfield Crescent, Edgbaston, Birmingham B15 3AU. Tel: 021-455 8736.

Sheffield/Leeds
J. Worsley, Fraser Williams (Northern) Ltd., St. James House, Vicar Lane, Sheffield 1. Tel: 0742 28638
Office also in London. Tel: 01-388 0038

Fraser Williams computer consultants

ANALYST/PROGRAMMER · LEADING PROGRAMMER · PROGRAMMER · TRAINEE ANALYST/PROGRAMMER

William Key

Application forms are a bore!

Please telephone or write to: Liz Segal, William Key & Partners Ltd., 504/8 Corn Exchange Buildings, Corporation Street, Manchester M4 3DD, 061-834 2271, during office hours, 061-928 5495 at other times.

So, to get that new job you want in the North of England, just complete ours and let us find it for you.
Analysts, Programmers, Salesmen and Support Staff are required by our clients who include Manufacturers, Users and Software Houses. Salaries are from £3,500 upwards.

Ref. CW9521

WEST CUMBERLAND FARMERS LTD.
LAKE DISTRICT COAST

Pay—£3,000-£3,250
Removal expenses
Over 12 months COBOL, PLAN or FTL6
Great variety of systems
Real-time systems using videos.
A-level education at least
Many benefits, flexitime, canteen, sports facilities
More benefits — pension & life insurance
Every reason to apply
Reply to

WAL HAYWOOD
Systems & Programming Manager
West Cumberland Farmers Ltd.
Catherine Street
WHITEHAVEN CA28 7QU
Telephone: Whitehaven 3191

THE SOUTH YORKSHIRE POLICE
(Based in Sheffield)

SENIOR SYSTEMS/ANALYST Grade SO1/2

£4759/£5512 Inclusive of supplements
Post reference B50

Applications are invited from suitably qualified persons with some previous experience of programming, who can undertake general responsibility for detailed design of part or whole of computer-based information processing systems.

Experience of computer applications in a police environment is desirable although not essential. A wide scope of activities is envisaged and these may include liaison with computer staff of the South Yorkshire County Treasurer's Dept., who currently operate an ICL 1904S computer.

Closing date 21st November, 1977.

Please write or telephone for an application form and further details quoting reference B50, to -

Chief Constable, South Yorkshire Police, Snig Hill, Sheffield S3 8LY. Telephone: Sheffield 78522 ext. 3366.

VICTORIA APPOINTMENTS LIMITED

HURRY! HURRY! HURRY!

Over 100 NEW NORTHERN JOBS registered this month

LOCATION	MACHINE	VACANCY	REQUIREMENTS	SALARY
Leeds	IBM 370	Senior Systems Analyst	Business Systems. Production control	[illegible]
Manchester	IBM 370	Chief Programmer	COBOL DOS/VS	[illegible]
Bradford	IBM 370	Analyst/Programmer	2 yrs. COBOL or ASSEMBLER DOS/VS	[illegible]
Liverpool	H 66	Operators	Large mainframe exp.	[illegible]
Sheffield	ICL	1 Systems Analyst 1 sen Prog	3 yrs. inc. prog. background 2 yrs. COBOL GEO II	[illegible]
Manchester	IBM 370	Systems Programmer	3 yrs. ASSEMBLER OS/VS. MVS	[illegible]
Liverpool	H 64/20	Systems Analyst	12 months Commercial systems	[illegible]
Manchester	IBM 370	3 Programmers	12 months COBOL DOS	[illegible]
W. Yorks	IBM 370	Chief Programmer	3-4 yrs. COBOL with ASSEMBLER OS	[illegible]
Manchester	Large ICL + minis	Senior Analyst/Prog	3 yrs. ICL COBOL	[illegible]
Manchester	IBM	4 Systems Analysts	Financial and Production Control, [illegible]	[illegible]
Hull	ICL	Systems Analysts Programmers	Commercial Application On-line COBOL and BASIC	

For an application form in respect of the above and many other vacancies, telephone Miss Halliwell NOW

on 061-236 7319
24 Mosley Street, Manchester 2
061-236 7319 (24-hr. answering service) and 061-236 7417

SALES EXECUTIVES NORTH WEST

Facilities Management is a rapidly growing medium sized systems house specialising in turnkey systems to first time users.

We are currently looking for a sales executive to take over an existing client base and generate new business from our Bolton office. The job is extremely demanding — the previous occupant shattered his target and sold £¼ million.

If you have the drive and the ability to hold down a job of this magnitude we want to hear from you. We will match hard work with hard cash.

Facilities Management
Afton House, Chorley Old Road, Bolton
Tel: (0204) 491316

HADRIAN COMPUTER SERVICES LTD.

Further opportunities exist for
YOUNG PROFESSIONALS TO WORK FOR A SOFTWARE HOUSE
Specialising in small main-frame, first-time users.
We pay by results — the job is as good as you want to make it.
We would like to hear from

PROGRAMMERS & ANALYSTS AND D.P. MANAGERS

If you have a background of systems 3 / System 33 / 2903 / P350,300,400 / MINIS.
If you know COBOL / RPG II / BASIC / MACHINE CODE.
Write today, giving full details of your career to date.
Vacancies exist at Newcastle and Nottingham. We offer a good working environment, a company car, pension scheme, and a satisfying and rewarding job. Write to:

J. D. Weightman
HADRIAN COMPUTER SERVICES LTD.
Northumbria House, Samson Close, Killingworth
Newcastle-upon-Tyne

MANCHESTER VACANCIES

SOFTWARE MANAGER £5000-£6000 + Car
Detailed experience of Mini based systems. Project Management responsibility

SYSTEMS SUPPORT ANALYSTS — Mini Manufacturer £5500 + Comm. + Car
Preferably experience of Pre and Post Sales Support on Mini based systems.

ANALYST PROGRAMMERS to £6000 + Bonus + Expenses
Preferably IBM COBOL + ASSEMBLER background with systems experience.

ANALYST PROGRAMMER — Mini Manufacturer to £5000 + Bonus
Ideally 2 years' COBOL + Systems experience in a support role

SYSTEMS ANALYST to £5000 + Travel Allowance
Experience of big installations, preferably IBM telecommunications knowledge.

2 COBOL PROGRAMMERS c £4500
Preferably experience of IBM 370 CICS. Expanding department.

2 COBOL PROGRAMMERS £3600-£4500
18 months COBOL ICL 1900 Filetab and FIND 2 an asset.

OPERATOR £ Neg.
Minimum of 1 year on ICL 1900 George II.

SENIOR OPERATOR to £4000
18 months experience, ICL 1903.

For further information and FREE LIST OF VACANCIES contact Ed O'Connell 061-832 4181 (day) or 061-225 5568 (evening), or write for application form to: 1 Ridgefield, Manchester M2 6EG.

Inter-Selection ltd

UNIVERSITY OF LIVERPOOL
Marine Transport Centre

Applications are invited for

FOUR POSTS OF RESEARCH ASSISTANT

to work on two S R C. funded projects, concerned with fleet planning for containerships including the use of feeder ships and with container port utilisation and cost functions. Candidates should be academically qualified. Familiarity with computers, knowledge of o r. techniques and transport experience will be regarded favourably.

The posts are as follows

Two Research Assistants financed for up to one year: One Senior Research Assistant financed for up to two years; One Senior Research Assistant financed for up to three years

The initial salary for the posts of Research Assistant will be within the range £2,904-£3,333 per annum and the initial salary for the posts of Senior Research Assistant (successful candidates for which will be of post-doctoral standard), will be within the range £3,333-£3,761 per annum.

Applications, together with the names of two referees, should be received not later than 10th November, 1977, by the Registrar, The University, P.O. Box 147, Liverpool L69 3BX, from whom further particulars may be obtained. Quote ref. RV/588/CW.

MANCHESTER SYSTEMS OPPORTUNITIES

As part of their development programme, our Clients, a major Manufacturing Company, wishes to recruit systems staff within the production, stock and distribution areas.

PROJECT LEADER — circa £5,500

Applicants should have:
★ a minimum of two years' experience in the implementation of relevant systems.
★ a knowledge of programming.
★ experience of data-base and teleprocessing advantageous.
★ ideally, a degree-level of education.

SYSTEMS ANALYST—circa £4,500

Applicants should have:
★ a minimum of 1 year's experience in a manufacturing environment.
★ ideally, be a Graduate.

Programmers with a minimum of two years' COBOL experience will also be considered for the position of Analyst/Programmer.
The Company is located near the city centre. Facilities include: ample free parking space, excellent conditions of employment and a re-location package where applicable.

CONTACT: SHEILA BRADBURY on: 061-833-0676 REF. NO. CW/10/14

SYSTEMS PROGRAMMERS—

GET YOUR "CICS" ON THE COAST

Have you between one and two years' involvement in Systems Programming and feel that you are not receiving the opportunities to train and develop your experience in this important area? Then, our clients, who are a wholly owned subsidiary of a major Food Group, are willing to develop your experience, train you into CICS, and also pay an attractive salary. They currently operate dual IBM 370 machines supporting a nation-wide teleprocessing network to 50 remote locations, and a major up-grade is imminent.

Working in pleasant offices on the attractive east coast, you will enjoy all the benefits associated with an International Group of Companies, including a very generous re-location package.

Initial interviews will be held in London, Birmingham and Manchester.

CONTACT: TONY DEANE on: 061-833-0676 REF. NO. CW/10/13

SCR
SPECIALIST COMPUTER RECRUITMENT LTD.
BIRMINGHAM 021-236 3781 FREEPOST
Freepost, Equity and Law House, 35-37 Great Charles Street Queensway, Birmingham B3 2BR
MANCHESTER 061-833 0676 FREEPOST
Freepost, Corn Exchange Buildings, Corporation Street, Manchester M4 3BD
LONDON 01-935 0671 FREEPOST 6
Freepost 6, 102, Blandford Street, London W1E 1JZ
Computing Services Association

Fortran Programmer up to £5,500 p.a.

Atkins Computing, already established as a leading timesharing and remote access service company, are continuing their planned growth based on key regional centres. In line with our development plans for 1977/78 we need an additional Support Programmer based in our Warrington office.
Candidates, male or female, should already be familiar with timesharing and have some problem-solving experience in an engineering or operational research environment, with at least 2 years' FORTRAN. Our immediate aim is to broaden experience by involving the programmer in as many situations as possible. In the longer term, there could be a move into sales.
Apart from a salary as indicated, we provide progressive employee benefits and relocation expenses where necessary. Please contact David Lloyd, Atkins Computing Services Limited, Fourmost House, Dolmans Lane, Warrington WA1 2EU, or telephone Warrington 34415.

Atkins Computing

Analysts and Programmers up to £4,500

Merseyside

Due to the planned development of a Production Control system and expansion of on-line facilities, this well known company — a long-established ICL 1900 user — requires young experienced Analysts and Programmers to supplement its development team.

Programmers £3,500 to £4,500

You will have gained a minimum of 12 months' experience of COBOL programming in a mainframe environment: Applicants for more senior posts should have been working in an ICL 1900 site using both COBOL and PLAN — on-line experience is not necessary as full formal training will be given; however, a wide range of applications experience is very important. Our client actively encourages progression into systems work should you have that ambition.

Systems Analysts up to £4,300

You will have already have completed at least one project on a main frame computer and have been involved in analysis for 18 months. If you have a wide range of applications experience and programming knowledge, then this is most advantageous. Hardware background is unimportant — you must however, possess the ability to apply computer technique to solving business problems.

The company are committed to data processing and other major developments are planned. Current hardware facilities include a medium sized ICL 1900 using EDS 60s and a large network of local TP facilities. Easy access is available by public transport both from Liverpool city centre and the suburbs, car parking facilities are also available.

To further your career on Merseyside please telephone our MANCHESTER office quoting ref: CW60-7M.

01-686 9693 (24 HOUR ANSAPHONE)
19 PARK STREET, CROYDON, CR9 1TN

061-236 2419 FAULKNER HOUSE
FAULKNER STREET, MANCHESTER, M1 4YD

COMPUTER AND PROFESSIONAL PERSONNEL CONSULTANTS
CAPP ASSOCIATES LONDON AND MANCHESTER
Computing Services Association

MINI COMPUTER PROGRAMMERS

BASED IN MANCHESTER £4000-£6000

Have you experience in one of the following types of applications and are you looking for a change of scene?

PROCESS CONTROL
DIAGNOSTIC SOFTWARE
COMMUNICATIONS SOFTWARE
SYSTEMS SOFTWARE

We are part of the UK division of one to the worlds' largest software organisations which is expanding its UK activities in these fields.

If you are interested, please phone 061-973 8368 or write to the address shown below:

SYNERGY SOFTWARE LIMITED
SIX ACRE HOUSE
TOWN SQUARE
SALE
MANCHESTER M33 1XZ

MEMBER OF THE CAP Gemini SOGETI GROUP

ata Computer Recruitment

A division of ATA Selection and Management Services, recruitment consultants to Industry and Commerce since 1962.

PROGRAMMER

£4000 + COST OF LIVING (Jan 1st) + 6 MONTH MERIT REVIEW

SOUTH MANCHESTER

The services of an additional programmer with approximately 2 years' experience of programming Business Systems in any commercial language are sought by our clients. He/she will be actively employed in Management Control Information Systems and not generally in the areas of Accounting. This role will involve frequent User liaison. The successful applicant will receive formal training in RPG II and will attend further courses as considered necessary for his/her career progression.

CHIEF OPERATOR

£3750 + COST OF LIVING (Jan 1st) + 6 MONTH MERIT REVIEW

SOUTH MANCHESTER

The duties will be to organise and operate the System 3 Hardware which is at present running on a 5-day single shift system. The main responsibilities are as follows:

Organising the Machine Schedule

Data Control and Data distribution

Advising Users and determining Job priorities

Ensuring the co-operation of User Departments to enable schedules to be adhered to

The successful applicant will report directly to the D.P.M. and keep him advised as to the Hardware's performance and capability. Overtime is payable on peak schedule where extra hours are worked.

Part of a British-owned International Group with an annual growth rate of 20%, the opportunities for personal advancement and gaining experience of advanced computer systems are excellent. There will also be an opportunity for involvement with European Communications.

For further details telephone Manchester Office 061-832 5857 or write enclosing curriculum vitae to ATA COMPUTER RECRUITMENT. ANGLIA HOUSE, 86 CROSS STREET, MANCHESTER, M2 4LA.

LONDON **(01) 637 0781** 230 Gt Portland St., W1N 5HG
MANCHESTER **(061) 832 5857** 86 Cross St., M2 4LA
BIRMINGHAM **(021) 643 1994** Woolworth Building, 102 New St., B2 4HQ
BRISTOL **(0272) 211035** Equity and Law Building, 36/38 Baldwin St., BS1 1NR
EDINBURGH **(031) 226 5381** Anglia House, 24/26 Frederick St., EH2 2JR
CRAWLEY **(0293) 514071** 46 The Broadway

The Next Feature to appear within the Recruitment Section of COMPUTER WEEKLY will be on December 1st, when career opportunities in the Midlands will be highlighted.

For further information on this important feature contact:
ALAN ESCOTT on 021-356 4838
or MARK WILLIAMS on 01-261 8019

Monk

Data Processing Manager

New Installation c. £5,000

We are an established building and civil engineering contracting company operating throughout the U.K., with our head office and main accounting centre located at Warrington, Cheshire.

We are currently planning for the installation of a small computer system, and a Data Processing Manager is required to take charge of the selected equipment. Initially the work will consist of installation planning and liaison with a software house for the conversion of accounting systems operating on an ICL 1004

Applicants, male or female, aged 25-35 years should preferably have practical experience of implementing accounting systems in the construction industry and have the ability to communicate effectively with user management. A knowledge of RPG II is also desirable.

Conditions of employment are those associated with a large company and include pension scheme and group BUPA scheme; re-location expenses will be paid if necessary

Applicants should write giving personal and career details to

The Personnel & Industrial Relations Manager, A. Monk & Co. Ltd., P.O. Box 43, Warrington, Cheshire WA1 4JB.

CIVIL ENGINEERING

THE UNIVERSITY OF SHEFFIELD
UNIVERSITY COMPUTING SERVICES

DEPUTY DIRECTOR

Grade III: £6443-£7951 a year

Applications are invited from men and women who are graduates for the above post tenable as soon as possible. The work of the Services is divided into three areas: User Services, Operations and Systems Development. The successful applicant will assume responsibility for the Operations and Systems Development areas. Applicants should have both managerial ability and technical expertise. Salary on scale as quoted above plus superannuation.

Particulars from the Registrar and Secretary, the University, Sheffield S10 2TN, to whom applications (1 copy) should be sent by 11 November, 1977

Please quote ref. R43/BB

THE UNIVERSITY OF SHEFFIELD
UNIVERSITY COMPUTING SERVICES

CHIEF SYSTEMS PROGRAMMER

Grade II: £5423-£6665 a year

Applications are invited from men and women who are graduates for the above post, tenable as soon as possible. The successful candidate will lead a team of six systems programmers. Expertise in systems programming and management of other programmers required. Salary scale as quoted above plus superannuation.

Particulars from the Registrar and Secretary, The University, Sheffield S10 2TN, to whom applications (1 copy) should be sent by 11 November 1977. Please quote ref. R44/BB.

LONDON

SOFTWARE SPECIALIST (Manager Designate)

SALARY c£7,500 p.a. plus Company Car

We are looking to recruit an EXCEPTIONAL PROFESSIONAL as a software specialist for the London Office of our clients, a major manufacturer with a phenomenal growth rate. They have gained the reputation of being a highly successful market leader offering unique career progression.

Candidates should have:

* An engineering background, coupled with systems design experience and fluency in COBOL, FORTRAN/and or ASSEMBLER.
* A Project Management background with experience of working within a commercial environment.
* The presence and ability to operate in a pre-sales role, demonstrating good communications skills.
* Ideally, experience of working in the City.

Above average salaries plus a company car are offered to the successful applicant, other benefits include membership to BUPA, and an excellent dynamic working environment.

ARE YOU EXCEPTIONAL?

Phone Cathy Tracey, 01-935 0671 REF. NO. CW 10/12

SPECIALIST COMPUTER RECRUITMENT LTD.

BIRMINGHAM 021-236 3781 FREEPOST
Freepost, Equity and Law House, 35-37 Great Charles Street Queensway, Birmingham B3 3BR

MANCHESTER 061-833 0676 FREEPOST
Freepost, Corn Exchange Buildings, Corporation Street, Manchester M4 3BD

LONDON 01-935 0671 FREEPOST 6
Freepost 6, 102, Blandford Street, London W1E 1JZ

Computing Services Association

SCR

Programmers & Analysts your future starts here

Minis PDP, NOVA

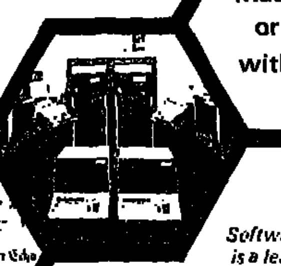
Mainframes IBM, ICL, UNIVAC, HONEYWELL

Languages COBOL, PLAN, PL/1, ASSEMBLER, RPGII, EASYCODE

Farnborough Macclesfield or London with opportunities for travel in the U.K. and abroad

£3·8–£6k

Relocation expenses will be paid as appropriate

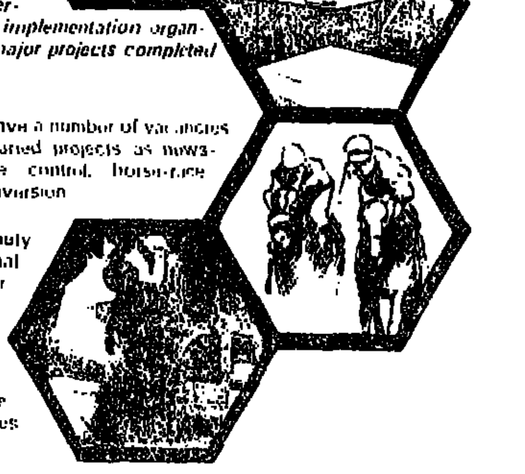


Software Sciences is a leading international systems consultancy and implementation organisation with a record of over 300 major projects completed throughout the world.

If you have the right experience we have a number of vacancies for an immediate start on such varied projects as newspaper systems, airline departure control, horse-race betting, plant control, and 2000 conversion

In addition to project variety you should expect exceptional career prospects, opportunities for travel at home and abroad, and the financial rewards and benefits associated with a company at the forefront of the industry.

If you are interested please contact, in the first instance Esther Dye at Software Sciences for an application form.



Software Sciences Limited
Abbey House [illegible] Farnborough Road
Farnborough Hampshire [illegible] Telephone [illegible]

ALL POINT NORTH

For D.P. professionals in the North of England who believe that their career is too important to leave to chance, we provide the maximum coverage of vacancies with minimum inconvenience to you. We have listed below a small selection of the vacancies available now, but should you not see anything exciting here, contact us anyway to find out about the many other opportunities in your area

NORTH EAST ENGLAND

SYSTEMS ANALYST to £4,600. a major manufacturing Company with newly uprated hardware and an expanding D.P. department are seeking two Analysts with good experience of order processing system to assist in new developments

SENIOR ANALYST to £5,200 for the same Company as above but with additional project responsibility. There are data base management systems and on-line data Communication facilities as well as the possibility of travel to America for other group Company. They are seeking expertise in management information systems

PROGRAMMERS to £4,500 IBM or ICL Cobol for manufacturing systems. Large installation in international manufacturing Company. there are excellent prospects for progression into system work

Interviews for these and other positions in the NORTH EAST will be held in NEWCASTLE

YORKSHIRE

PROGRAMMER/ANALYST to £4,500 ICL installation. small developing department require sound Cobol or RPG II experience. Must be capable of effective communications at all levels. PCS knowledge an added advantage

PROGRAMMERS to £5,000. Cobol experience preferred. major installation with ambitious development plans require hard working experienced programmers who wish to learn new techniques and earn promotion

MANCHESTER/CHESHIRE

PROGRAMMERS to £4,850 ICL Cobol background required for bureau environment. expanding real time systems. well established progressive company

These are representative vacancies only. for further information of these and hundreds of other jobs ring **HALIFAX (0422) 58 232**

NOW.

CRH COMPUTER RECRUITMENT
QUEENS ROAD MILLS, HALIFAX HX1 4LR
HALIFAX 58232

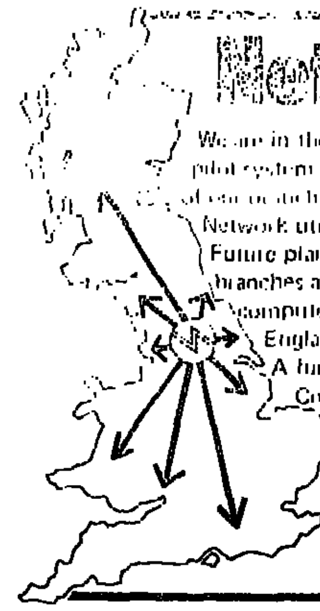
YORKSHIRE REGIONAL HEALTH AUTHORITY

COMPUTER OPERATOR

Starting salary £2001 rising by annual increments to £[illegible] plus 10% shift allowance plus Phase I and II Pay Supplements. (Applicants from outside the Health Service normally start at the minimum). Following a recent internal promotion a vacancy exists for an experienced Operator to join a team of operators working a two-shift system covering a five-day week. The [illegible] is an ICL 1904A with 128K core 6 × EDS[illegible] [illegible] 1600 bpi tapes, 2 LP, CR, PTR and 7020 terminals working under George 3 Operating System. Candidates should have experience of operating in a medium to large ICL Installation using George 3

Application form and job description from Regional Personnel Officer, Yorkshire Regional Health Authority, Park Parade, Harrogate HG1 5AH. Closing date 11 November, 1977

Network Designer to £4,500



We are in the process of implementing a pilot system to install all terminals in a number of our branch offices on a Real-Time Network utilising a Univac 1106. Future plans include linking all 500 branches and establishing a second computer centre in the South of England.

A further network designer for the Communications Division is required to assist in:

* NETWORK DESIGN & IMPLEMENTATION
* NETWORK HARDWARE EVALUATION
* TERMINAL EVALUATION & IMPLEMENTATION

Applicants are expected to have had sound experience of technical research in either communications, implementation or evaluation.

The position will be based at our computer centre at Halifax, West Yorkshire and relocation expenses will be paid where appropriate.

Please phone or write to Tina Black at:

Provident Management Services Ltd.
Colonnade, Sunbridge Road, Bradford, West Yorkshire, BD1 2LQ.
Telephone Bradford 33321 Ext. 231

LAKE DISTRICT

We are looking to strengthen our Systems and Programming team and, therefore, have the following opportunities available.

SENIOR SYSTEMS ANALYST

£4,500 +

You will have at least 3 years' systems and analysis experience with preferably one year's programming. Experience in solving or managing 'business' problems is a prerequisite for the appointment. You are likely to either be a graduate, have 'A' Levels or an equivalent qualification. You will be expected to play a major part in the future development of new systems.

SENIOR PROGRAMMER

Approx. £4,250

You will be an experienced Senior Programmer with not less than 4 years' relevant experience and will be fully conversant with Cobol and at least 1 other language, preferably Assembler. Software experience in a Data Base area will be an advantage. You will be required to play a key role in the development and maintenance of a wide range of systems.

We operate an ICL 4/50 with systems extensively involved with Production Retailing, Distribution and Accounts, and we have our own in-house Data Base.

BENEFITS

Good contributory Pension Scheme.
Relocation Expenses will be paid.

INTERVIEWS

Write or phone for Application Forms to: Martyn Harvey, K Shoemakers Ltd., Netherfield, KENDAL, Cumbria LA9 7BT. KENDAL (0539) 24343, ext. 6.

K Shoes

PENTA MANAGEMENT SERVICES LIMITED

P.M.S.L. GROUP

P.M.S.L. GROUP

URGENTLY REQUIRE

CONTRACT PROGRAMMERS

CONTRACT		CONTRACT
ICL Plan I COBOL Yorkshire	ICL COBOL South London	Due to expansion we now require a
IBM PL1 Oxford	ICL COBOL Central London/City	MANAGING CONSULTANT
Honeywell G COS North West	Honeywell GS2000 West London	for our Manchester Office. A good salary is offered plus commission

FOR DETAILS OF THESE AND ALL OUR OTHER VACANCIES PLEASE PHONE US ON 061-834 2003

Appointments

LONDON Derek Biskemore 01-261 8464 · MANCHESTER Owen Kelly 061-872 4211 · BIRMINGHAM Alan Escott 021-356 4838 · GLASGOW Owen Kelly 061-872 4211 · BRISTOL Alan Escott 021-356 4838 · LONDON Steven Bassingthwaite 01-261 8174 · MICHAEL WHITE Classified Advertisement Manager 01-261 8028/8665

DatasolveDatasolveDatasolveDatasolve

We've made things easy for you!

If you're chasing a new job or a new contract, save time by filling in your application form here and now.

Personal Please write in ballpoint, using block capitals.

Surname ____ Forenames ____

Address ____

Telephone Home ____ Office (discretion will be used) ____

Age ____ Place of Birth ____ Car? ____

Are you prepared to relocate? ____ UK/Abroad (delete)

Experience Place the number of years in each box, e.g. IBM 360/370 .... [4]

Machines: Please specify model.

- IBM 360/370
- IBM others (specify)
- ICL 1900/2900
- ICL others (specify)
- Honeywell
- Univac
- Burroughs
- PDP
- Other mainframes (specify)
- Other mini-computers (specify)

Languages

- Cobol
- Plan
- Assembler
- PL/1
- Fortran
- Filetab
- RPG11
- Auto/easy/user code (delete)
- Others (specify)

Operating Systems

- DOS
- OS
- George (specify)
- CICS/HASP/GRASP (delete)
- DBOMP/MVT/IMS/CMS (delete)
- Others (specify)

Applications

- Commercial
- Financial
- Payroll
- Production control
- Stock control
- Scientific
- Realtime
- Software
- Database
- Message switching
- Communications
- Data transmission
- Central process
- Teleprocessing
- MIS/CPA/PERT (delete)
- Magnetic tape
- Disk
- Others (specify)

Job Titles

- Project leader
- Systems analyst
- Systems engineer
- Analyst/programmer
- Systems programmer
- Programmer
- Operations supervisor
- Operator
- Consultant
- Sales representative
- Others (specify)

Position sought

Please state briefly the type of appointment you are seeking.

Minimum salary £ ____ Notice required/Date available ____

Signed ____ Date ____

Cut out the whole advertisement and post to one of the addresses below.

01-491 4706 24-hour answer 'phone. Knight Computer Services Limited, 14 Old Park Lane, London W1Y 4NL.

Knight

021-772 8331 Midlands Recruitment, Knight Computer Services Limited, Woodlands Road, Birmingham B8 3BD.

Knight Computer Services Limited

Staff Services Division of BOC Datasolve Group and CSA a member of Computing Services Association.

CW27

The Engineering Industry Training Board has the responsibility under the Industrial Training Act, for training in engineering and allied industries. We are at present inviting applications for the following positions in our Watford office.

Senior Systems Analyst

A Senior Systems Analyst is required for the design and implementation of commercial systems for an I.C.L. 1902 S.

Candidates should have had 2 years systems experience. The ability to communicate effectively and knowledge and understanding of business procedures is essential. The Board has a 7502/15VDU system and experience in this field or with MAXIMOP would be an advantage.

The salary being offered is in the range of £4,697 to £5,666 including supplements. Benefits include a Contributory Pension Scheme, 20 days annual leave increasing with service to 25, and Luncheon Vouchers.

Research Officer

Our Research Division is responsible for identifying the research and information needs of the Board and for commissioning or carrying out the necessary studies.

A graduate in Statistics, Mathematics or Computer Science is required to join a small team providing Computing Services to the Division. The post will provide an opportunity to gain training and experience in data analysis, and in the writing of data management and analysis software on an ICL 1900 series computer. A knowledge of FORTRAN and/or COBOL is desirable but not essential.

The appointment will be either as a Research Officer (starting salary: £3,113 p.a. including supplements) or as a Graduate Trainee (starting salary: £2,596 p.a. including supplements), depending on qualifications and experience. Benefits include a Contributory Pension Scheme, 23 days annual leave and Luncheon Vouchers.

For an application form for either position, please write or telephone:

Mr. E.T.G. Shuldham,
Engineering Industry Training Board,
P.O. Box 148, 41 Clarendon Road,
Watford WD1 1HS.
Tel: Watford 44322

EITB ENGINEERING INDUSTRY TRAINING BOARD

BP

Application Programmers & Programmer/Analysts

for BP Group Head Office

BP operates a large multi-processing Univac 1100 installation for running remote batch, database, and on-line application systems which cover both the commercial and technical activities of the BP Group, including those associated with Shipping; Exploration; Production; Engineering; and Purchase and Stores. We are closely involved in computer application systems connected with North Sea oil.

THE NEED: An increased demand for our computing service has created the need for more programmers and programmer/analysts to develop and support such systems. They will be based in the City of London.

THE SPECIFICATION: Our main programming languages are COBOL and FORTRAN and applicants should have been using one or other of these languages for at least three years. Practical experience with Univac 1100-series computers will be an advantage. We are looking particularly for those with computing experience in the geophysical and commercial fields. A degree or equivalent professional qualification is essential. Age range 24 to 35.

THE CONDITIONS: The conditions of service are excellent and fringe benefits include non-contributory pension scheme, subsidised restaurant, and first-class sports and social facilities. Salary is dependent upon experience.

APPLICATIONS: Please write giving age and brief details of qualifications, experience, and current salary, quoting reference PFC/8/FY, to: **The Manager, Central Recruitment, The British Petroleum Company Limited, Britannic House, Moor Lane, London EC2Y 9BU.**

NORTHERN APPOINTMENTS APPEAR ON PAGES 17, 18, 19, 20, 21

Computer sales professionals. Room for more at LogAbax, nationwide.

If you are making a good living at the 'small end' of the market. (Olivetti, Burroughs, Philips, NCR and the like), you could be making more with Logabax.

- **Does £15K + sound a lot to you? It doesn't to us.**
- **The LogAbax range is wider—that means more to sell to more customers.**
- **LogAbax are in computers 100%—that means our resources and energy do not get diverted.**
- **We are expanding faster than most—that means opportunity.**
- **We appreciate good sales people and know their worth—that means we're realistic.**

If the time is right for you, phone Gerry Cook on 01-965-0061, or write telling him about yourself.

LogAbax It could change your mind. For the better.

LogAbax Limited, 1-7 Wesley Avenue, London NW10 7BZ. Tel: 01-965 0061

MYRIAD APPOINTMENTS LIMITED

Computer Personnel Consultants

PROJECT LEADER

Near PUTNEY **c £6,000**

Having gained good analysis experience you are now ready to progress to a Project Leading role. Heading a development team of seven or eight you will be given responsibility for several major systems and plan, schedule and supervise the entire workload of your team.
The Company operate one of the foremost sites in the country and you will have the latest equipment and techniques at your disposal. An individual training programme will be agreed to ensure your progression along an established career path which includes options to enter main line managerial situations.
Sound analysis experience and flexibility are the keynotes for success and experience of on-line systems would be ideal. You will be offered a financially sound package which includes 4 weeks' holiday, LV's, Pension Scheme and Flexitime.

POTENTIAL ANALYST

LONDON **c£5,500**

A keen ambition to progress to analysis and a willingness to program, coupled with the flexibility to cope with "hands-on" situations are the main requirements to secure an extremely rewarding position.
Functioning as an Analyst/Programmer the position will entail staff supervision and responsibility for the development of projects from feasibility to their successful implementation.
An outstanding feature of this appointment is the unusual nature of the applications using two main-frames and a mini computer linking the Company's branch offices throughout the country.
Candidates should have a good programming background gained on any machine and enjoy working in a small D.P. environment which in return offers excellent scope for career development and progression.

PROGRAMMING CONSULTANT

3-4 YEARS' ASSEMBLER

LONDON **UP TO £6,500**

We are seeking a Programmer or Analyst/Programmer keen to accelerate his/her career by a move to Team Leading. You will be expected to play a major role in the development of new systems, being responsible for the programming and implementation of projects from specification through to overall testing.
The person appointed will have in-depth knowledge of Assembler with an appreciation of commercial data processing. Previous supervisory experience is not essential although a commitment to maintaining high standards of coding and documentation are required.
The company a subsidiary of a major group offers a friendly environment with the exciting prospects of allowing your career and responsibility to grow with the company. The Offices are conveniently situated to both underground and main line stations.

NEW INSTALLATION ANALYSTS and ANALYST/PROGRAMMERS

Near HAMMERSMITH **£4,000 to £6,500**

This is a rare opportunity for Analysts and Analyst/Programmers at all levels of seniority to join a young department at the grass roots.
After the initial phase of implementation a further fourteen applications are scheduled for computerisation and offer the successful candidates involvement in their development from inception to completion.
The Company is a rapidly expanding major British organisation with a wide range of interests in industry. The systems are therefore varied and in some cases extremely unusual.
The new Computer Services Company has been established to supply the data processing requirements of the Group using a large, country-wide T.P. network and can offer an exceptionally attractive and progressive career path to experienced Analysts and Analyst/Programmers with any form of good commercial background.
Commencing salaries will be offered commensurate with experience and conditions of employment are excellent.

Please telephone for a confidential discussion or write to:
30 Fleet Street London EC4Y 1AA
01-353 5868

MANAGEMENT & EXECUTIVE SELECTION

telephone 01-637 9611

SPOTLIGHT ON SALES

Management and Executive Selection, one of the leading professional consultancies in the computer field, provide a complete recruitment service covering the entire data processing function.

WORD PROCESSING c£12K + Car

U.K.

Selling equipment at the forefront of technology requires salesmen who are experienced in the computer market of today and who are fully aware of the potential tomorrow. Word processing offers one of the most lucrative markets over the next few years. Our client leads the field in the design of systems to meet the most demanding word processing requirements in business, industry and government. Their equipment ranges from the simple automatic typewriter to disc based mini computer systems, each solidly backed by sophisticated software, which is constantly developed to ensure the greatest flexibility. Experience and success are essential attributes demanded of their sales force.

They are a young team working together to open new territories, breaking new ground with them will be rewarding and highly remunerative.

Ref. CW/600.

MINI COMPUTERS c£12K + Car

INTERNATIONAL U.K. based

The International division of this worldwide highly successful mini computer manufacturer has attained outstanding results in its drive into Europe, Middle East and Africa. Furthermore the successful conclusion of the next stage of their expansion programme will see the division doubling in size and turnover during the next 12 months. As part of their plan they are now wishing to recruit a high calibre sales person with a strong technical background and faultless sales record, who will be capable of negotiating at the highest level and have the aptitude and resilliance to work in the International market. The responsibilities of this position are to maintain existing accounts as well as obtain new business selling to OEM customers, distributors and end users.

Based in the U.K. Head Office, there will be extensive short term travel, and experience of selling overseas would be an asset though not essential.

Ref. CW/601.

TIME SHARING c£10K + Car

LONDON

Rapid access to management information systems on a time sharing basis is the economical solution sought by many top companies today. This is an ideal opportunity to benefit from this expanding market by joining a small, dynamic team of professionals in the new time sharing division of a large and highly respected company. This team possesses all the expertise required to constantly develop and enhance the already considerable selection of packages they offer. These developments include financial, database, statistical and major program language facilities. You will be selling these to both new and existing customers and in order to achieve the fullest rapport with your clients it is essential you possess a good technical background and ideally have had experience in the management information market. Every incentive is given to the salesmen: individual and group commission schemes reward personal and team success.

Ref. CW/602.

TERMINALS c£14K + Car

NORTH/MANAGER

To meet the growth requirements of the U.K. Division of this secure and successful American Corporation, a Sales Manager is required to handle all accounts and support activity in the North of England. Their major product, an advanced sóftware driven terminal, is directed towards the RJE and Distributed Data Processing market.

This is a keenly competitive area and thus only a person capable of combining an in depth knowledge of the RJE networking and communications philosophy with the outstanding personal qualities required to market and capture a largely untapped source of sales need apply.

Obviously previous sales success is essential but other qualifications are less important than common sense, industry and adaptability.

The job is extremely demanding but highly rewarding both in terms of remuneration and future prospects.

Ref. CW/603.

MAINFRAME c£10K

SOUTH/MIDLANDS/SCOTLAND

They are one of the world's leading mainframe manufacturers, they have just had their best sales year to date, and best of all they are looking for salesmen throughout the company. The requirements are for experienced, mature, successful sales persons who have been selling commercial systems and preferably have had previous technical background. The responsibilities are to sell their medium to mainframe computers to both new and existing customers. The systems are designed for each customer, a large support and training staff providing the necessary backing to the sales force. Just as the range from medium to mainframe systems provides scope for immediate sales success, so also does the expansion from large to major company provide for future career development.

Ref. CW/604.

MICRO COMPUTERS c£10K + Car

LONDON/MIDLANDS

A company's most important asset is its people, is a dictum ignored by many, but not by this international organisation. Their recognition of the value of the individual is evident in the policies of pay and promotion offered. They manufacture a wide range of measurement and computation equipment, and produce systems combining the two. Currently they require a number of sales persons, in various parts of the country, to sell small desk top computer systems.

These desk based units may be linked to any manufacturer's mainframe or used as stand alone devices. It is essential that applicants have a technical background gained probably in a scientific or engineering environment, as well as the experience needed to sell to both OEM and end user market.

Basic salary, commission, bonuses, profit share, a 2 litre company car, plus private mileage, the chance in the future of promotion to management, to move into marketing, or to go overseas — these inducements are not just tantalising promises but realities within this company.

Ref. CW/605.

Suite 201/6 Albany House 324 Regent Street London W1R 5AA 01-637 9611

MANAGEMENT & EXECUTIVE SELECTION

We recognise the importance of the role of the salesman and we have specialised in this area for a number of years — hence we have built up a rapport with all the major computer companies and we have been asked by 12 of our clients to present the following opportunities.

MINI COMPUTERS c£11K

LONDON

The concept of selling modular systems to solve the problems of everyday business life, has proved to be the right one for this European manufacturer. For the last four years the U.K. division has sold a range of small business systems, complete with packaged or tailor made software, for commercial applications. Their latest line of attack has been directed on the large organisations in the U.K., and the resulting expansion is their reason for seeking salesmen to handle these national named accounts.

Maturity and experience are the necessary attributes needed to handle this level of the market. A commercial background gained preferably through selling mini computers is essential.

The success of this division to date is a mere indication of greater things to come, and thus prospects for remuneration and promotion are excellent.

Ref. CW/606.

MAINFRAME c£8K

CITY

There is a fortune to be made in finance, computerising the City's insurance companies and merchant banks, and our client has made a major impact in this area. In this fast moving field they can offer the reliability of their own established medium and mainframe computers, linked with the versatility of constantly developed hardware and software. Keeping ahead of the competition has brought them success. To further this they require additional salespersons to open new business and develop existing accounts.

A proven record gained through mainframe sales is imperative, a background in finance desirable. This company prides itself in the professional structuring of the sales departments, providing ample opportunity for later promotion.

Ref. CW/607.

MINI COMPUTERS c£10K + Car

HOME COUNTIES

Pioneers in the use of mini computers in distributed data processing, backed by one of the world's largest companies, this successful company is now setting up a young, dynamic team to establish itself in a new area of the market with the first time user. They sell a powerful mini computer system with keyboard, screen, discs and printer, complete with a comprehensive commercial package range, at a highly competitive price. This means of course that a good salesman can make a killing provided he is sufficiently motivated to open up this new business area. As well as the necessary personal attributes required to achieve this, it is also essential that candidates have proven sales experience in the commercial sector. This is an excellent opportunity for the young sales persons to make their mark in a remunerative market.

Ref. CW/608.

For full details of the appointments please contact Faye Ogilvie or Gareth Bennett-Coles.

COMP UTILITY c£10K + Car

LONDON

This multi-national, multi-million company created the computer utility concept of providing central computer power to users at remote points, and have subsequently grown into one of the largest and most successful service organisations in Europe.

They offer flexibility to the customer with the choice of a comprehensive package range, or system development on direct access or remote batch terminals; and in line with today's requirement offer distributed processing.

They now require sales staff to sell their advanced commercial packages and access systems. The emphasis is on new business. The sales force are freed from post sales responsibility by the early and continuing involvement of the support staff.

Commercial selling experience is essential, gained either with a bureau or hardware manufacturer.

This is the doorway to a lot of money for the man who is capable of opening it.

Ref. CW/609.

MINI COMP c£8K

CITY

The world's first and most popular OEM mini computer supplier is looking for ambitious computer people to join their City branch. Two different types of vacancy exist. First they require persons with a proven sales record gained in a commercial, scientific or engineering background. Second, they need experienced banking systems people, who have not necessarily sold before, but who are interested in taking up that career. As part of a highly professional team, the salespersons are responsible for the total operation from the first customer approach, through to contract negotiations, handling either large accounts or new OEM contracts.

Skilled people with drive and determination are guaranteed to go far in a company whose low cost, high performance equipment has sold around the world, and whose future sales seem set to soar.

Ref. CW/610.

BUREAU c£9K + Car

LONDON/HERTS

Backed by a successful British group, this large, thriving bureau is unparalleled in its teleprocessing experience. It currently controls a vast national and shortly, international network, offering all services from batch processing to facilities management. Its package range is equally expansive covering everything from accounting applications to micro film systems. It offers a comprehensive service within the group in addition to having an extensive external customer base.

It is to create new business in this area that they require salespersons. To qualify for such a role special qualities are required, namely a totally professional approach to selling, backed by a sales record of substantial achievement preferably gained in a bureau environment.

A realistic base salary up to £½K plus good commission scheme and car provide an interesting package.

Ref. CW/611.

Suite 201/6 Albany House 324 Regent Street London W1R 5AA 01-637 9611

MANAGEMENT & EXECUTIVE SELECTION

datascene

MINI-PROGRAMMERS

Communications — City

up to £6000

If you're an experienced Mini Programmer with knowledge of BASIC+ and RSTS gained on PDP 11, you're needed now for a communications company heavily involved with the media. It's a unique and stimulating environment offering, among other things, total job satisfaction.

We also need Mini Programmers with a knowledge of ASSEMBLER, FORTRAN and CORAL 66 gained on SINGER 1800, KIENZLE and PDP.

We have vacancies for you that offer salaries ranging from at least £3,600 to £5,750. They're mainly with software houses involved in businesses from Banking to Retailing. Whichever job you choose, you can be sure that it offers solid career potential — especially as the job scene is looking very healthy. Get your slice of the action by ringing us TODAY.

FOR FURTHER DETAILS CONTACT US NOW.

Datascene Limited **01-439 7871**
Sceptre House 24-hour answering service
169-173 Regent Street, London W1R 7FB

datascene

JUNIOR/SENIOR OPS. SHIFT LEADERS

IT COSTS YOU NOTHING TO USE US. IT COULD COST YOU A CAREER IF YOU DON'T

Because we've got some of the best jobs around. Jobs that offer great salaries, benefits, conditions and — most important — prospects.
You may be very happy where you are but think about it — how can you know that you're in the right job without finding out what else is going.
A job is like a marriage — easy to get into, sometimes expensive to get out of. So we match people to jobs with great care. Once you're in, apart from the occasional letter of thanks we don't expect to hear from you again. For a long, long time.
We have vacancies for Ops. with IBM DOS/VS and ICL GEORGE experience, as well as Ops for HONEYWELL, UNIVAC, BURROUGHS, NCR and PDP, in London, or locally. Carrying salaries up to £6,000.
Save yourself a lot of trouble by ringing today.

FOR FURTHER DETAILS CONTACT US NOW.

Datascene Limited **01-439 7871**
Sceptre House 24-hour answering service
169-173 Regent Street, London W1R 7FB

datascene

FORTRAN PROGRAMMERS

Up to £7000

London and Home Counties

If you're experienced on mainframe or minis, we have exceptional opportunities for Fortran Programmers with a background in any of the following:

TYPESETTING — **ENGINEERING**
GRAPHICS — **PETROCHEMICALS**
OPS. RESEARCH — **FINANCE**

Jobs range from consultancy users to Software houses. And each position is tailored for you.

FOR FURTHER DETAILS CONTACT US NOW.

Datascene Limited **01-439 7871**
Sceptre House 24-hour answering service
169-173 Regent Street, London W1R 7FB

datascene

SYSTEMS ANALYSTS

UP TO £5750

WEST END

We're looking for Analysts to work in a highly stimulating environment where personality matters almost as much as ability.
The company concerned runs an IBM 370/145 under O/S and are currently developing an IMS system.
They need people with at least one year's allied experience on medium to large IBM or ICL systems with a good knowledge of COBOL or PL1. Database experience would be a considerable advantage but is not essential.
You'll enjoy a range of 'big company' benefits and solid career prospects. Salary is not a limiting factor for the right people.

FOR FURTHER DETAILS CONTACT US NOW

Datascene Limited **01-439 7871**
Sceptre House 24-hour answering service
169-173 Regent Street, London W1R 7FB

datascene

CONTRACT SALES CONSULTANT

£8,000 plus profit share

Primarily, this is a job for a real business go-getter. Someone who can consolidate existing business, increase volume and turnover, and seek out new clients.
In a position created by expansion, you will also be responsible for the management and control of contract staff.
You should be sales motivated, ambitious, and ideally have a background in Systems and Programming.
The rewards are high. Remuneration is by way of excellent basic salary, incentive bonus plus profit share.
Find out more by telephoning Mike Dauncey or Martin Greyson.

FOR FURTHER DETAILS CONTACT US NOW

Datascene Limited **01-439 1856**
Sceptre House 24-hour answering service
169-173 Regent Street, London W1R 7FB

datascene

PROGRAMMERS:

If you can get on with us, you can get on with anybody

If you're a middleweight Programmer with about 1 to 3 years' experience you're probably wondering where your career goes from here.
Ring us. Because once we know who you are and what you can do, we can offer you a tailor-made job. A job that offers real career prospects.
All we ask is that you should welcome the challenge of working REAL TIME, BATCH, DATABASE or COMMUNICATIONS systems. Emphasis is on IBM/ICL, but any hardware experience would be acceptable. This, plus experience of COBOL, PL1 or RPGII will guarantee a first-class move upwards. Our clients include Software houses, consultancy users, retailers, banks and insurance companies.

Salaries range up to £5,500, but should not form a barrier to the right people.

FOR FURTHER DETAILS CONTACT US NOW

Datascene Limited **01-439 7871**
Sceptre House 24-hour answering service
169-173 Regent Street, London W1R 7FB

£4,000 to £14,000

Not sometime in the future but right now. Marcol are one of Europes leading computer service organisations, and because of our size and wide range of interests, we can offer exciting opportunities plus a variety of new experiences you would be unlikely to get anywhere else:

New machines
New languages
Advanced technology
Diverse interests
(telecommunications, aerospace and petrochemicals)
Assignments overseas

Make it with Marcol

Couple this with real opportunities for advancement and the top salaries we are prepared to offer and you'll realise you'll "make it with Marcol" sooner and in more ways than one.
Contact: Derek Ashley, 01-402 9355,
Marcol Computer Services, 60 Queens Gardens, London W2.

MARCOL
Dynamic Systems for tomorrow's needs.
An associate of The Norwich Union Group.
NORWICH UNION

MANCHESTER

Programming Career opportunity
Salary £3,500

This is your opportunity to join a small professional installation that is now entering an important phase of development. This has lead to a programming post that offers:

- ★ Teleprocessing and database involvement
- ★ Career progression into Systems analysis
- ★ Development as opposed to maintenance programming
- ★ Large company benefits including relocation assistance

To be considered for this position you should be able to offer:—

- ★ Minimum 1 year COBOL experience
- ★ Preferably 'A' level standard of education.

Contact Tony Deane 061-833 0676

CONTACT: ADVISING CONSULTANT :
PETER RIGBY on 021-236-3781 quote REF: CW/10/18

SPECIALIST COMPUTER RECRUITMENT LTD.
BIRMINGHAM 021-236 3781 FREEPOST
Freepost, Equity and Law House, 35-37 Great Charles Street, Queensway, Birmingham B3 2BR

SCR — Computing Services Association

ARUN DISTRICT COUNCIL

Systems Analyst

Up to £5065 **South Coast**

Opportunity with a progressive local authority on the Sussex Coast for an experienced analyst to join our computer team.

We operate a Honeywell 62/40 mixed disc, tape and cassette. The analyst will lead major projects. He/she should have a background in Cobol and a knowledge of GCOS or similar.

Generous relocation expenses scheme and temporary accommodation considered.

Ring for details and an application form — Littlehampton 6133 Extn. 318, Manpower Officer, Council Offices, Littlehampton, Sussex, BN17 5EP.

Closing date: 7th November, 1977.

Telford Your Opportunity

TELFORD DEVELOPMENT CORPORATION

COMPUTER STAFF

The Corporation is developing the New Town of Telford in Shropshire to a population of 150,000, involving major capital investment together with management responsibilities. The Finance Department has current vacancies for:

(a) Senior Programmer — New Towns Grade VII (£4,395 to £4,845 plus £520 supplement).
(b) Programmer — New Towns Grade V (£3,366 to £3,708 plus £613 supplement).

The Corporation has a new Honeywell 62/40 with discs to carry out its highly diversified computing workload, using RJE and multiple batch, and moving towards communications using V.D.U. equipment. A heavy schedule of development of new and amended systems is underway. Two COBOL programmers are required, ideally experienced in a multi-programming environment using JCL and advanced data management techniques.

The Corporation offers housing to rent, generous relocation expenses, loans for car purchase and mileage allowances, superannuation and life assurance scheme. Applications should be sent to the Corporation Secretary, Telford Development Corporation, Priorslee Hall, Telford, Salop, within 14 days of the date of this advertisement.

Credit Factoring International

A member of the National Westminster Bank Group

Data Processing Manager

Factoring

We are market leaders in the fast-growing factoring industry and due to continued expansion we require a Data Processing Manager to join our senior management team.

Reporting to a Board Director the person appointed will be responsible for the data processing function including main frame, systems and programming. At least five years' experience is necessary including systems design, project planning and control and the development of on-line systems gained in a senior computer operations position.

We have a Univac 9400 which is used in batch and on-line mode to provide a comprehensive service to our clients. We are currently enhancing our batch accounting systems and are carrying out feasibility studies covering our future re-equipment needs to enable on-line working to cope with our continued expansion in the UK and overseas.

We offer a competitive salary and an excellent range of fringe benefits.

Applications should give brief details of career to date and be addressed to:

L. M. Bland, Director
Credit Factoring International Limited
Smith House, PO Box 50, Elmwood Avenue
Feltham, Middlesex TW13 7QD.

Software Engineer

up to £5,500 + car allowance

System Industries (UK), a progressive and expanding subsidiary of System Industries Inc., the world's largest independent supplier of mini-computer disc storage systems, now have an excellent opportunity for a software engineer.
This is a demanding position involving the maintenance and development of SI software as well as special sales projects for the marketing department.
Candidates will ideally be graduates aged 21-35 with at least four years' experience in computing (inclusive of degree studies). This should include at least one year's experience of Assembler programming and knowledge of operating system techniques.
After six months' training with the parent company in California the successful candidate, although based in Surrey, will make frequent visits to customers in Europe.

TELEPHONE: Janet Smith, GUILDFORD (0483) 38688

PER PROFESSIONAL and EXECUTIVE RECRUITMENT

This vacancy is open to male and female applicants

COMPUTER WEEKLY

When you advertise for staff make sure you reach the largest audience available.

Computer Weekly's circulation of 78,665 enables you to contact that audience.

Computer Weekly —something special

RPG II

ASSEMBLER HELPFUL

Travel, good salary, interesting airline work. Call Michael Langton, 01-499 8119, or write Scal, 24 Cranbourn Street, London WC2H 7AA.

FREELANDERS

Get a free winter holiday

Phone Penny 01-402 9355

ANALYSTS/ PROGRAMMERS

LOOKING FOR AN END TO DRUDGERY?

THEN WORK FOR THE FASTEST EXPANDING INDEPENDENT MINI-COMPUTER COMPANY IN THE UK.

We require analyst/programmers to work alongside our salesmen and manage their own projects.
We sell a wide range of mini-computers using DEC hardware and software.
You will need experience in commercial applications and be used to meeting customers. Our main area of activity in the UK is London and the Home Counties, although we are currently installing systems in other European countries.

INCENTIVES

High salary. Car with travelling expenses. Large profit-sharing bonuses. Company may be re-located.

Interested? Then ring:
Bill Cannings, Computer Aided Systems (Sales) Limited
600 Green Lane, Goodmayes, Essex, 01-599 8658/01-599 0999

COMPASS

Analysts and Programmers for Management Services in the City.

Whitbread & Company Limited, one of Britain's largest brewing groups, is currently engaged in an expansion programme with the commitment to develop and install advanced DP systems utilising Distributed Intelligence and nationwide Terminal networks. This will be based on a complex of Honeywell 725's and level 64's strategically situated throughout the UK. All development work is centralised through our Management Services Department located at Chiswell Street, London E.C.1.

Due to the increasing demand for the Department's services within the Group we now need to strengthen and expand our project teams over the next few months, by the appointment of a number of Analysts and Programmers with various backgrounds and levels of experience. The department operates a career structure at all levels which provides opportunities for advancement through programming to analysis.

Systems Analysts £5000–£7000

Candidates should have sound academic qualifications and at least 2 years' experience in Systems Analysis, preferably in a commercial environment. The more Senior positions will require a minimum of 4 years' relevant experience. The applications are wide ranging from a mini-computer order-entry system, to standard commercial applications covering the finance, production, distribution and marketing areas of the Company. Knowledge of Honeywell equipment is desirable but not essential. There is the opportunity to join the department as an Analyst/Programmer as an alternative to pure systems analysis. Ref: HQ36

Programmers £3500–£6000

Programmers with upwards of 1 years' COBOL experience are required to join an established programming team. The more senior positions will involve supervision of other programmers working in project teams. Honeywell experience would be a valuable asset to any candidate, although not essential. The main language is COBOL, however, there are applications where a working knowledge of Easycoder, RPG, Fortran and Filetab would be a distinct advantage. Opportunities exist for the right people to progress through our Analyst/Programmer function into Systems Analysis, or for the professional programmers who do not wish to move into analysis there are Team Leader Vacancies. Ref: HQ35

Actual starting salaries will depend on individual qualifications and experience, and will be supported by a substantial range of fringe benefits.

Please write to or phone for an application form: J. F. Jarvis, Selection Manager, Whitbread & Co. Ltd., Chiswell Street, London EC1Y 4SD. Tel: 01-606 4455 Ext. 251, quoting the appropriate reference.

WHITBREAD

BE OUR COMPUTER OPERATOR IN BERMUDA

SDI, the world's leading software manufacturer, require an IBM 370 DOS or DOS/VS operator preferably with GRASP(VS) experience.
The required qualifications are:

- * A minimum of three GCE 'O' levels or equivalent
- * Previous 370 operating experience with DOS or DOS/VS.
- * Successful results in our recruitment tests
- * Willingness to work flexible hours

To apply, please phone Brenda Anderson at 01-736 1382 to arrange an interview.

SDI

Computer Engineers New Zealand

Control Data, one of the world's leading manufacturers of IBM plug compatible equipment has a requirement for experienced Customer Engineers to join field teams in Auckland and Wellington, New Zealand.

Control Data's requirements are:
Minimum of three years Customer Engineering experience, preferably on IBM 360 and 370 mainframes, magnetic tapes, printers and discs.

We offer:
Salaries in the range of 9,000 New Zealand dollars to 14,000 New Zealand dollars depending on experience (approx. £5,927 to £7,881).
Payment of reasonable relocating costs for successful applicants and their families.
Assistance with accommodation on arrival.
Four weeks annual leave.
Income insurance scheme.
Immediate entry to superannuation scheme.
Six monthly merit reviews.
Final interviews will be conducted in London late October by a representative from Control Data New Zealand.

You should contact Diana Bellgrnan 01-572 8411 for an application form or write to her at:
Control Data Limited,
Green Lane,
Hounslow,
Middlesex TW4 6BJ.

CONTROL DATA

"ADVANCE WITH DISTRIBUTED PROCESSING"

PROGRAMMING TEAM LEADER+ANALYSTS+ SENIOR PROGRAMMERS

CENTRAL LONDON SALARIES £5,500—P.A.

This multi-million turnover company uses its large IBM installation primarily to provide a comprehensive internal computing service, the computer unit is based in Central London and our clients are embarking upon an ambitious DISTRIBUTED SYSTEMS DEVELOPMENT PLAN, which has meant significant team expansion.

CANDIDATES SHOULD HAVE:

SYSTEMS ANALYSTS
- ★ 12 months + formal systems experience.
- ★ preferably a programming background.
- ★ the ability to liaise with users.

PROGRAMMING TEAM LEADER
- ★ a minimum of three years' programming experience.
- ★ fluency in COBOL.
- ★ supervisory experience.
- ★ experience of systems and program design.

SENIOR PROGRAMMERS
- ★ 12 months + programming experience.
- ★ fluency in COBOL.
- ★ ability to progress into supervisory roles.

All applicants should have gained a sound commercial understanding, preferably in an IBM environment. Career progression is excellent, so too are the working conditions, attractive fringe benefits include luncheon vouchers, season ticket loan scheme and concessionary discounts on company products. Interested?

CONTACT: CATHY TRACEY 01-935 0671 REF. NO. CW/10/17

SPECIALIST COMPUTER RECRUITMENT LTD.
BIRMINGHAM 021-236 3781 FREEPOST
Freepost, Equity and Law House, 35-37 Great Charles Street Queensway, Birmingham B3 2BR
MANCHESTER 061-833 0676 FREEPOST
Freepost, Corn Exchange Buildings, Corporation Street, Manchester M4 8BD
LONDON 01-935 0671 FREEPOST 6
Freepost 6, 102, Blandford Street, London W1E 1JZ

SCR

Computing Services Association

Technicare International

A rapidly expanding U.K. company engaged in maintenance and technical training projects world wide, urgently require personnel with the following qualifications and experience on our permanent staff overseas.

A.—
IBM 370/158 UNDER OS/VS1-PROGRAMMER. The ideal candidate will have eight years' experience on the above system and larger and wide experience of producing versions of VS1 or VS2 operating systems.

B.—
SYSTEMS ANALYST. Experience in the investigation and solving of operational problems using and interpreting the results from an IBM 370/158. Petrochemical exposure very desirable.

C.—
SERVICE TECHNICIAN. Field or workshop experience of Hewlett Packard Computers and test equipment is essential.

Generous tax free salaries are offered: Accommodation, food, and leave travel free of charge. All positions may be bachelor or accompanied status.

Please apply to Mrs. A. Nairn
Technicare International
ROSE INDUSTRIAL Estate
Bourne End, Bucks.
or telephone Bourne End 22823

SYSTEMS PROGRAMMERS ANALYST/PROGRAMMERS

SALARY £4,500 to £7,500 p.a.
with additional benefit

Alimand Management Services Ltd. have specialised with an acknowledged degree of success in Mini-Computer applications currently concentrated in the banking and financial sectors.

Following sure and steady expansion we are currently recruiting efficient and mature personnel to fill interesting and demanding assignments in the UK and the Americas. There are a range of opportunities from one year's experience upward. Tel. Graham Russell on 01-581 1234 or write: Alimand Management Services Ltd., 250 Brompton Road, London SW3 2AT.

CONTRACT & PERMANENT PROGRAMMERS
IBM & DEC PDP

Continuing our policy of planned expansion during 1977, Euroco now have a number of opportunities for Permanent and Contract staff who are seeking interesting and varied work in either our Large Systems or Mini Computer Division.
We are currently looking for programmers with anything from 2-4 years' experience and the flair and skills to carry out assignments effectively and efficiently
In return for your skills, Euroco offer job satisfaction, continuity of employment for contractors, a starting salary up to £6K p.a. and a performance and profit linked bonus scheme and the normal fringe benefits
Contractors will be offered competitive rates up to £200 per week + expenses and on certain contracts bonuses will be offered
The skills we currently require are

IBM COBOL/PL1 — **£6K p.a. + expenses or £175 p.w. + expenses**

Two Programmers with the above skills are required in the West Country for an interesting conversion and development on one of our major client's systems. The ability to communicate with user management is essential and the additional knowledge of ICL COBOL would also be useful
Ref. 25/10/01

IBM DOS or UNIVAC 9030 ASSEMBLER — **£175 p.w.**

One Programmer is required to work as one of our clients, a major international bank in London. The application is based on the development of a foreign exchange system. A knowledge of structured programming techniques would be advantageous.
Ref. 25/10/02

IBM OS ASSEMBLER — **£175 p.w.**

Two programmers are required in Central London to work with an already established team, who are currently maintaining and developing a complicated financial system.
Ref. 25/10/03

IBM DOS COBOL — **£175 p.w.**

One Programmer is required for development work which is currently being executed by a small team of our own staff. A knowledge of structured programming and VSAM would be an advantage.
Ref. 25/10/04

PDP11 RSTS E — **to £67K p.a. + bonus**

Our own mini computer division is currently seeking three applications Programmers with 1-3 years' experience of BASIC+ programming techniques We are currently developing a real-time on line order processing and stock control system for a large international company
The majority of the programmer's time will be spent at our offices but there will be opportunities of working at the client's installation for which expenses will be paid
Ref. 25/10/05

FOR OUR CLIENT

PDP11 RSTS E — **to £5K p.a. + bonus + expenses**

One of our clients, a major force in DEC mini computer systems, is seeking a sales oriented support analyst/programmer to assist him in the development and sales of client based commercial systems. The successful applicant will need 2-3 years' experience of BASIC+ programming techniques and the ability to communicate at a sales level with their clients.
Our client offers a salary up to £5K per annum + a bonus in the region of £1 7K per annum, expenses and car allowance. There are also the normal company fringe benefits
Ref. 25/10/06

We can't say anymore than that — except what you have to be to get them. Male or Female, preferably 24 or over with a minimum of two years' in-depth experience of the required skills
Why not work for a well established international group of companies?
Ring Roger Slade now, on 01-637 9898 during the day or leave brief details and a call back number for us on our telephone answering machine.

22 Newman Street, London W1P 3HB Tel: 01-637 9898/7
Computer Consultants — London, Hamburg

euroco

WATFORD

Shift Leader

A vacancy exists for a Shift Leader in the Engineering Industry Training Board's Computer Department at Watford

The present hardware consists of a 48K 1902S, 4 X EDS 60, 2 X MT, 2 X LP CR, running under both manual executive and George 2 +

On-Line processing is currently being developed, using ICL 7502 MTPs and MAXIMOP

Applicants should possess:
—At least 3 years' experience of 1900 Hardware
—Proven supervisory experience, preferably at Shift Leader / Senior Operator level
—Sound knowledge of George 2 and ICL utility programs

A two-shift system is currently in operation, covering the hours 09 00 hrs - 17.00 hrs (Monday - Friday) and 23.15 hrs - 08.00 hours (4 nights).

Conditions of employment and environment are excellent.
—Salary depending on age and experience, in the range £3,400 to £4,300, inclusive of shift allowance and Phase I and II Supplements
—Paid overtime
—23 days' leave
—Luncheon vouchers — 50p per day
—Contributory pension scheme
—Generous paid sick leave

Why not give Mr. D. Hirst a ring on Watford 44322. Ext. 13, or write for an application form to

Mrs. D. L. Gyford
Personnel Officer
Engineering Industry Training Board
41 Clarendon Road
Watford, WD1 1HS

EITB
ENGINEERING INDUSTRY TRAINING BOARD

Computer Personnel International

110 St. Martin's Lane, London WC2N 4BH
Telephone: 01-836 6775

WHAT IS A BUREAU?

It's a place that is continually busy — answering client queries, meeting deadlines, error handling, setting up JCL, and dealing with any number of other urgent jobs. Computer bureau staff never get time to be bored, and certainly can't complain about lack of responsibility. We need the following people to help us cope with our heavy workload.

SHIFT LEADER
Possibly you are currently a senior operator ready for promotion to Shift Leader. You will have a sound knowledge of DOS, used with a spooling system, and have definite leadership capabilities. Salary very negotiable. c£4,000.

OPERATOR
With at least 6 months' DOS experience, preferably more, and ideally a knowledge of DOS JCL. Salary in the range of £3,000 - £3,500 depending on experience.

DATA CONTROLLER
In addition to general data control duties you will be involved in client liaison and job setup. You must be able to handle pressure situations effectively and communicate well. Knowledge of DOS JCL a distinct advantage. Salary £3,000 - £3,500

Contact: MARILYN DAVIDSON

NEW JERSEY U.S.A.

The President of a prestigious U.S.A. Software House will be interviewing in London the week beginning November 14th. This is the first recruitment visit to England of this highly professional and profitable organisation and they want to meet Analysts/Programmers and Programmers of all levels. O.S. COBOL is essential and IMS experience would be an advantage, but not essential.

A slide presentation on both the company and living in the U.S.A. will be given together with the opportunity of discussing living conditions and costs with one of our U.S.A. based people.

An excellent salary package is offered along with the opportunity to travel within the U.S.A. on business.

For further details and to schedule an interview.
Contact LINDA BENSTED.

DO YOU WANT TO WORK IN S. BUCKS?

If so, these vacancies will be of interest to you.
Our clients installation comprises an IBM 370 running under DOS/VS POWER/VS. A number of commercial applications are scheduled for development in the near future which will heavily involve Databases and the company is prepared to give you necessary training in this area.

ANALYST/PROGRAMMER — **to £4900**
In this capacity you will be involved in all aspects of complete projects from feasibility to implementation so flexibility and a responsible attitude are needed as well as experience in Cobol or RPG II.

PROGRAMMER — **to £4,000**
A minimum of 1 year's Cobol experience is required. Promotional prospects to Analyst/Programmer are excellent for the right applicants as the company believes in promotion from within.
Although experience on IBM 370 would be preferable, applicants for both positions with experience on other manufacturers hardware would be welcomed.

Contact: LINDA BENSTED

IF YOU ARE UNABLE TO TELEPHONE, BUT WOULD LIKE TO APPLY FOR THESE POSITIONS OR ANY OF THE MANY OTHERS WE HAVE REGISTERED WITH US, PLEASE COMPLETE THE APPLICATION FORM BELOW AND RETURN IT TO US. ALL APPLICATIONS ARE TREATED WITH THE UTMOST CONFIDENTIALITY.

FULL NAME			POSITION REQUIRED		MINIMUM SALARY REQUIRED	
ADDRESS			NATIONALITY	AGE	SEX	MARITAL STATUS
			WHERE DO YOU WISH TO WORK?		ARE YOU PREPARED TO RE-LOCATE?	
TELEPHONE NUMBERS	OFFICE	HOME	DO YOU HAVE YOUR OWN TRANSPORT?		ARE YOU PREPARED TO TRAVEL IN YOUR JOB?	

DATES FROM	TO	NAME OF SCHOOL, COLLEGE OR UNIVERSITY	EXAMINATIONS PASSED, DEGREES, ETC. OBTAINED	COMPUTERS, LANGUAGES, OPERATING SYSTEMS USED, AND FOR HOW LONG

DATES FROM	TO	NAME OF CURRENT, THEN PREVIOUS EMPLOYERS AND POSITIONS HELD	SALARY START	SALARY END	PLEASE DESCRIBE THE NATURE OF YOUR WORK AND YOUR OWN ROLE IN EACH PROJECT/APPLICATION

Real Time People — Computing Services Association — Computer Room People

Anglian Water Authority

The Authority is installing a dual Honeywell 66/10 at its Huntingdon Computer Centre which will be linked via a network of over 70 terminals to 20 different offices.

A major programme of computer development using Data Base Management and Telecommunications techniques has now commenced and this offers an exciting opportunity for computer professionals to be involved in a challenging period of development for a recently formed Computer Services Department.

BUSINESS SYSTEMS

SYSTEMS ANALYSTS RP 31 (H5AO12/015) up to £6,000

A Strong computing background is required with experience of analysis and design of financial computer systems in large installations, on-line applications and techniques and data base concepts.

PROGRAMMING TEAM LEADER RP 25 (H5AO19) up to £5,500

A minimum of three years' COBOL programming experience is required in a large machine environment. Experience of interactive program development, modular/structured programming techniques, at least one major operating system, and programming standards and control procedures together with experience of team leading is required

SENIOR PROGRAMMERS RP 26 (H5AO27/28) up to £5,000

A minimum of three years' COBOL programming experience is required in a large machine environment. Experience of on-line program development and modular/structured programming techniques is required.

PROGRAMMERS RP 27 (H5AO32) up to £4,500

A minimum of two years' COBOL programming experience is required in a large machine environment. Experience of on-line program development and knowledge of modular/structured programming techniques is desirable.
Applicants will initially be required to assist in the development of the Authority's Customer Service System for a consumer base of approximately 2.1 million properties. Subsequent development will include a fully integrated terminal based financial system.

All posts are located at Regional Headquarters in Huntingdon. Relocation expenses are payable in appropriate cases

Application forms (returnable by 10th November, 1977) are obtainable from the address below. or by telephoning Huntingdon (0480) 56181 — Ext. 252.

Personnel Department, **ANGLIAN WATER AUTHORITY**
Diploma House, Grammar School Walk, Huntingdon, Cambs. PE18 6NZ

Thames Polytechnic

Computer Centre

Senior Computer Operator

Salary scale £3827-£4555 inclusive

Applications are invited for the post of Senior Computer Operator in the Computer Centre. Applicants for this post must be at least 23 years old and should have at least two years' computer operations experience, some part of which should have been on I.C.L. 1900 equipment. Preference will be given to applicants who have also had some experience in the control of operations staff.

Thames Polytechnic Computer Centre provides a service to the academic staff and students of the Polytechnic and to the administration. The present equipment consists of an I.C.L. 1902A with 48K, E.D.S., M.T. and the usual input/output slow peripherals. A multi-access service is offered via a scanner and Maximop and also via several D.E.C. machines installed in the London Polytechnic network.

Details and application form (to be returned by 8 November, 1977) from the Staffing Officer, Thames Polytechnic, Wellington Street, London SE18 6PF (01-854 2030, Ext. 433).

WHITBREAD FLOWERS LIMITED

SHIFT LEADERS

Whitbread Flowers, one of the largest Operating Companies in the Whitbread Group, have vacancies for Shift Leaders in their Computer Operations Department at Cheltenham.

The installation consists of.

A Honeywell Level 64/20 running under GCOS 2000 soon to be upgraded to run under Level 64 NATIVE GCOS.

Four Honeywell 716 mini computers providing a real-time service for remote terminals, and shortly the introduction of further communications equipment

The successful applicants, who may be male or female, will be responsible for the running of the Machine Room for the duration of the shift

They will have considerable operations experience on a Disk based operations system, preferably Honeywell. A knowledge of communications equipment would be an advantage and proven ability to co-ordinate and control staff is essential

3 shift working is in operation, in respect of which a generous shift allowance is payable

Excellent salary, four weeks' holiday, contributory pension scheme, subsidised canteen, and other fringe benefits.

Please apply in writing stating age, qualifications and experience to:

The Personnel Services Manager
Whitbread Flowers Limited
Monson Avenue, Cheltenham, Glos.

Baxter-Travenol
We are one of the world's leading manufacturers in the medical field with manufacturing and marketing facilities in all major European countries.

systems programmers analysts analysts/programmers

Brussels

Our Information Services Operations in Europe are expanding rapidly. At present we have IBM systems in the U.K., France, Germany, Sweden, Italy, Spain and Belgium, a European headquarters installation in Brussels, and a link to corporate headquarters in Deerfield, Illinois.

We need data processing professionals with proven records of success who want to join a fast-growing company operating internationally.

Location is Brussels. Salaries and potential are excellent.

Write with full c.v. to: IAN GILLIES, Director of IS, Travenol International Services Inc., chaussée de La Hulpe 130, B-1050 Brussels (Belgium).

Interviews with selected applicants will be held in London shortly.

TRAVENOL INTERNATIONAL SERVICES INC.

PROGRAMMER/ANALYST

c £5,750 + Car

We are a small alert Systems House in Thames Ditton, Surrey, specialising in PDP II commercial systems. We require experienced DIBOL/CTS 300 expertise. COBOL Programmers will be considered

Call Penny West, Gamma Business Systems (London) Ltd., 01-398 7235.

PROFESSIONAL SALES PERSONS

required for expanding subsidiary company of

TH. STRALFORS GROUP SCANDINAVIA
LONDON/HOME COUNTIES
YORKS/LANCS/E.M.

Salary and commission negotiable Car and fringe benefits. Knowledge of computer printer ribbons essential

D. C. Rees
Thompson Deer
(Computer Supplies) Ltd.
Phoenix Works, Cornwall Road
Hatch End, Pinner
Middx. HA5 4JZ
01-428 0077

READING BOROUGH COUNCIL

We are seeking additional staff to assist us with a new development programme that will give increased on-line management information to local and remote users. We have on site, one of the largest ICL 2904 configurations — 2 linked processors of 48K each, 6 EDS 60's, 9 track magnetic tapes 7502's with VTs and DDEs — on which our existing financial and non-financial systems are run

We require:

4 PROGRAMMERS

who have at least 2 years' practical experience using COBOL. Salary according to experience to £4616 including supplements. Ref F513-516

1 JUNIOR PROGRAMMER

who has recently gained a computer related degree or HND in Computer Studies.
Starting salary £2983 including supplements. Ref. F519

1 TRAINEE PROGRAMMER

with minimum of 2 'A' levels, one of which must be mathematics.
Starting salary according to age and qualifications to a maximum of £2569 including supplements. Ref. F518

Generous relocation expenses including removal expenses, 75% legal and other costs, lodging allowance, etc., may be available in appropriate cases

Application forms available from Personnel Section, Level 11, Civic Offices, Civic Centre, Reading. Telephone 0734 55911, ext. 2032.

Online Systems Programming Team Leader

Morgan Guaranty, one of the world's leading banks, is seeking a programming team leader to work in its new offices in Stratford E15

The position involves managing a programming team developing online systems within the computer department which is currently working on a major automation exercise

The resulting integrated systems, which will be implemented in phases over the next few years, cover all aspects of banking activity including Loans, Deposits, Foreign Exchange and Securities and incorporate online data entry and dealers enquiry systems with many terminals

The successful applicant will have at least three years programming experience on IBM 360/370 mainframes which will preferably include experience of a sizeable and online project and a good knowledge of PL/1 and familiarity with CICS

His or her work will involve participation in programme design and specification and supervision of programming and testing with particular emphasis on quality control while meeting deadlines.

The Bank pays particular attention to career development and provides both in-house and external training facilities

An attractive salary will be paid reflecting the importance of the post. In addition there are attractive fringe benefits which include an annual bonus, low cost mortgages and a non contributory pension scheme

Please apply giving full details of career to date or telephone for an application form to Mr R.F. Bishop, Morgan Guaranty Trust Company of New York, Morgan House, Stratford Centre, Stratford, London E15 1XB — Telephone 01-555 5111

Morgan Guaranty
Trust Company of New York

ANALYST/PROGRAMMER

Salary Circa £5,000

Company

Gainsborough Fabrics Ltd is a member of the international Carrington Viyella Textile Group engaged in the production of warp and weft knitted fabrics for apparel and industrial end uses. It is situated in rural Suffolk and is the headquarters site of the Knitting Division.

Job

As our Computer operation is at present being redesigned a challenging opportunity exists for a person who has initiative and is adaptable to gain valuable experience in this phase of development. The applications of our operation are in the production, commerical and accountancy areas,

Person

Applications are invited from persons with a minimum of 'A' level education together with 3 year's Cobol experience and 2 year's Systems Design, preferably in an industrial environment.

Benefits

A salary, which is negotiable of circa £5,000 together with an attractive fringe benefits package offered and relocation expenses will be paid where appropriate.

Write or telephone for application form to:
G. R. S. Bell, Personnel Manager
Gainsborough Fabrics Ltd.
Radiator Road, Great Cornard, Sudbury
Suffolk CO10 0HY

Gainsborough Fabrics Ltd
A Carrington Viyella Company

HERTS., BEDS. & BUCKS

SYSTEMS ANALYST c £6000

Financial and costing application design experience required. Cobol on ICL equipment. Programming background preferred.

OPERATORS c £3500

IBM OS VS or MFT experience for large expanding installation. 1 year's minimum.

COMPUTER SERVICE ENGINEERS to £4500

For PDP based equipment used for a number of interesting industrial applications. UK travel. Company car.

PROGRAMMERS c £4000

A number of vacancies for 1 to 2 years' Cobol experience in all areas.

VACANCY LIST

Ring us for our constantly revised list of vacancies in Herts., Beds., Bucks. and N. London.

Contact: Ray Brackenbury, St. Albans 6...

BLUE ARROW
Blue Arrow House, 8 Holywell Hill, St. Albans, Herts

Software Development West Holland Communications

Analyst/Programmers, Senior Analyst/Programmers £8000-£11000
Consultants, Senior Consultants £12000-£15000

Consider the benefits of working in the most successful multi-national group in the design and implementation of DATA-COMMUNICATIONS systems, (on-line, real time, message switching and computer networks)

- ☆ **varied, advanced and sophisticated projects**
- ☆ **numerous types of mini hardware**
- ☆ **software flair and ingenuity encouraged**
- ☆ **rapidly growing state-of-the-art company**
- ☆ **increased career development possibilities and progression profile**
- ☆ **higher standards of living, relocation expenses paid**
- ☆ **based in West Holland, one hour anywhere UK, easy access Europe**

We want to discuss all the above in detail with qualified and experienced Software Professionals who wish to diversify and improve their DP experience which should include at least a year on mini based systems.

In return high salaries will be offered to those who are at ease within a client orientated environment where standards are of prime importance and the individuals expertise is recognised by progressive improvement in positions and financial status.

CW43/1 KINGSTON

Programmer/Senior Programmer ICL 1900, West London c£4500

This position will appeal to a talented 1900 PROGRAMMER who wishes to become involved on an installation which is committed to develop a large on-line order processing system in excess of one hundred terminals. He or she will be an expert member of a small team responsible for accounting applications and the direction and motivation of less experienced programmers.

A good COBOL background is required, a knowledge of PLAN would be an asset, but the desire to make a major contribution to a rapidly developing DP department is essential.

The successful applicant will work for a well known company in a new DP centre with benefits which include excellent career prospects and salary progression.

To secure an interview, please telephone and speak to Clive Hartrup.

CW43/2 MAYFAIR

Future Systems

A team of highly technical PROGRAMMERS and CONSULTANTS is currently being sought by a large and very progressive software house. The work will stretch right across the board from development of micro based software, compilers to interactive distributive processing software and message switching to advanced applications on a variety of machines.

Programmers £5000-£6000

This is a rare opportunity for PROGRAMMERS and DESIGNERS with experience of any of the above fields who have also had at least one years' assembler experience to join at the very early stages of development and be involved with the initial design plans. ENGINEERS with micro processing background will also be considered.

Consultants £6000-£7000

CONSULTANTS who are still highly technical and have had experience with more than one range of machines, minis, or communications are urgently required. Unique opportunities also exist in an advanced micro processor-linked project.

Relocation expenses will be met where it is necessary to move to Berkshire. The company offers attractive terms, conditions and individual career prospects as well as possibilities for overseas travel. Please ring Stella Mitchell for a confidential discussion.

CW43/3 KINGSTON

CCC

Computing Services Association

KINGSTON: 44 Wood Street, Kingston upon Thames, Surrey, England. Telephone 01-549 3212 (24 hours). Telex 27950
DUBLIN: Canberra House, 24 Lower Leeson Street, Dublin 2. Telephone 762170/762188/785692. Telex 30742
AMSTERDAM: Rivierstaete, Amsteldijk 166, Amsterdam 1010. Telephone 461844 Telex 11336

Computer System Engineers
with a flair for using advanced techniques
£4500-£5500

At Letchworth we design and build customised computer systems. Right now we're looking for System Engineers (men or women) who will be prepared to accept a large degree of individual responsibility within small project teams. You must be able to demonstrate an ability to design and write low level software for Executive, microprocessor applications, control programs or test programs. We'd also like you to have a flair for utilising new and advanced developments.

You will be involved in software and hardware aspects of projects from conception to completion offering a wide variety of work and the opportunity to travel both within the UK and overseas.

Why Letchworth?
Letchworth is situated in the pleasant surroundings of North Hertfordshire and offers a wide range of housing, good educational opportunities and excellent road/rail communications.

In appropriate cases a generous relocation package will be offered.

Find out about the excellent career development opportunities and attractive conditions. **Come in and see us in London on Wednesday 2 and Thursday 3 November at the New Ambassadors Hotel, Upper Woburn Place, (near Euston Station), anytime between 5 pm and 10 pm.**

We'd like to see you, but if you can't come along, write with details of your experience, quoting reference CW1546, to: Peter Christie, ICL, PO Box No 4, Icknield Way, Letchworth, Herts. Alternatively telephone him on Letchworth (04626) 2191 for an application form.

International Computers ICL
think computers–think ICL

SALES EXECUTIVE

A position offering outstanding career potential. This is an opportunity to join a young and expanding organisation and play a major role in its development.

The successful applicant will be a sales professional with a proven record of success in the Computer Peripheral field and will also have commercial acumen and management ability. A company car will be provided and earnings on quota will match the most attractive currently paid within the industry.

Write or call: The Sales Director
PERIPHERAL HARDWARE LTD.
Link House, Pool Close, West Molesey
Surrey, KT8 0HW

Telephone 01-941 4806, or visit us on stand C40 at Compec, Wembley 8th, 9th, 10th November

PROGRAMMERS

The Victory Insurance Company Limited, which transacts all forms of Reinsurance business world-wide, has an immediate need for two Programmers to complete its Data Processing Team

The Company uses a Data 100 linked to IBM 370/158 and 145 Computers

Applications are invited from persons aged 20-30, of sound education, who essentially have a good knowledge of ASSEMBLER, and a knowledge of DATABASE would be an advantage.

The Company offers excellent working conditions, attractive salary scales, contributory Pension Scheme and favourable Staff House Purchase facilities.

Applications which will be treated in confidence should be addressed to:

Deputy Staff Manager
The Victory Insurance Company Limited
Victory House
Castle Hill Avenue
Folkestone
Kent CT20 2TF.

KINGSTON POLYTECHNIC
PROGRAMMING MANAGER
COMPUTER UNIT

To be responsible for the control and co-ordination of both systems and application programming services. Wide programming experience preferably including experience of leading a programming team. A higher degree in one of the fields of statistics, numerical analysis or other common applications area of computers preferred.

PO ID grade £4,689-£5,250 + £312 supplement + stage 2 + London allowance £285.

Further details and application forms from Assistant Registrar (personnel), Kingston Polytechnic, Penrhyn Road, Kingston upon Thames KT1 2EE. 01-549 1366.

Computer Operators
Chatham

Lloyd's the world renowned insurance organisation, operating an I.B.M. 370/145 and a 135 on a 24 hour, three shift system, with DOS VS and GRASP VS, want operators with a minimum one year's relevant experience. The initial location is Romford, Essex relocating to Chatham, Kent, July 1978 (generous travel assistance will be given while Romford based).

We would prefer to hear from candidates already living in Kent, or who would like to move to the Kent area with generous relocation assistance.

Other benefits include non-contributory pension, luncheon vouchers, free life assurance and regular opportunities for overtime.

Please write or phone in confidence to:
Mrs. B. Neumeister,
Personnel Department,
North House,
Romford, ESSEX.
Romford 67511 Ext. 28.

LLOYD'S OF LONDON

Real-time Software Engineers
Dorset to £5,500

Our client is a leader in state of the art technology involving DEC PDP11 central processors & microprocessors (programming in CORAL) for traffic control/systems projects. The applications are wide, both in the U.K. and export markets. Hence the need is for engineers with four or more years relevant experience, who wish to broaden their activities in the real-time field and who are also interested in dealing directly with clients as a design engineer.

Apart from competitive salaries & a variety of work, the positions offer a first-class working environment and the obvious advantages of working in Dorset.

For further information please contact John Nolan on 01-638 1891.
Richard Owen Advertising, 56 Moorgate, London EC2R 6EL.

Richard Owen Advertising

SOFTWARE SUPPORT ANALYSTS
c. £7000 + Car/allow. + Profit Sharing

Pre-/post-sales support for leading mini-computer manufacturer with extensive range of software applications.

PROGRAMMERS
c. £5000

Experience in Cobol for wide range of on-line, data-based management information systems and financial packages.

Ring Harvey Jacobs, 01-568 7795
BRYTEK STAFF CONSULTANTS
Star House, York Parade
Great West Road, Brentford, Middlesex

PROJECT LEADER to £6,500
W OF LONDON
A highly diversified large Co requires a person with 8 years D P exp Must have carried out major project(s) from conception to implementation Exp in a Prod / Manuf environment desirable

SYSTEMS PROGRAMMER to £5,000
NR. ESHER
A large progressive company is looking for a person with at least 1 year's IBM ASSEMBLER under OS/VSI Your duties will be to maintain an efficient D P Operating System by assisting in all aspects of systems programming

SYSTEMS ANALYSTS to £5,500
SLOUGH
Systems Analysts required for new installation Exp in financial systems an advantage Plenty of opportunity to be involved in development work

SOFTWARE PROGRAMMER to £4,500
SUSSEX
If you are educated to A level or have a computing degree plus 2 years' exp of IBM, operating software ASSEMBLER & COBOL there is an opportunity for you to be involved in helping to install and maintain the operating system & teleprocessing software used in the installation

Please phone for application form

AMES PERSONNEL
TELEPHONE: 01-767 0611

SERVICE ENGINEER

An exceptional opportunity exists for an ambitious engineer who has a wide experience of peripherals. The task is to build a first-class customer service function for a new company in the computer peripheral business, specialising in both innovative and standard terminal equipment. A high salary plus company car and exceptional prospects of rapid promotion are the rewards.

Write or call, The Sales Director
PERIPHERAL HARDWARE LTD.
Lund house, Pool Close, West Molesey
Surrey, KT8 0HW

Telephone 01-941 4806, or visit us on stand C40 at Compect Wembley 8th, 9th, 10th November.

we want to see
OPERATIONS STAFF
...at most levels, particularly with IBM or ICL Hardware.

we want to see
SENIOR PROGRAMMERS & PROGRAMMERS
...with a minimum of 2 years experience.

we want to see
SYSTEMS ANALYSTS/ DESIGNERS
...with minimum of 3 years experience of both minis and main frames at all levels.

EVERYTHING TO GAIN NOTHING TO LOSE*

KBS Computer Services are looking for top quality personnel to fill vacancies in various parts of the country.
We are constantly expanding our placement lists, for further information complete the coupon, (NO STAMP NEEDED) and leave the rest to us
*-not even the cost of the stamp!

KBS COMPUTER SERVICES.
State Insurance Building,
14 Dale St. Liverpool L2 4TH
Telephone: 051-236 9718

Place in envelope and post to: KBS Computer Services, FREEPOST Liverpool LV4435
Name
Address

CJA
RECRUITMENT CONSULTANTS
35 New Broad Street, London EC2M 1NH
Tel: 01-588 3588 or 01-588 3576
Telex No. 887374

A career appointment offering European travel, and the prospects of Management in the short term

SYSTEMS ENGINEER
HOME COUNTIES **£4,500 - £6,000 + BONUS + CAR**
EXPANDING DATA PROCESSING AND COMMUNICATIONS MANUFACTURER

This vacancy is open to candidates, aged 24-30, who must have had at least 2 years successful experience in a Computer Sales Support role calling for a high degree of self-motivation Reporting to the Systems Manager the successful candidate will be responsible for overseeing the successful implementation of our Client's systems throughout Europe, entailing detailed specification, project Management installation and post sales support and ad hoc assignments Up to 75% away travel, and considerable customer contact, will be involved Whilst a hardware background is ideal, exposure to low level programming is essential — as are a highly commercial attitude and initiative drive Initial salary negotiable £4,500-£6,000 + bonus + car, all expenses paid contributory pension scheme, free life assurance, assistance with removal expenses if necessary Applications in strict confidence under reference SE3812/CW, to the Managing Director

CAMPBELL-JOHNSTON ASSOCIATES (MANAGEMENT RECRUITMENT CONSULTANTS) LIMITED
35 NEW BROAD STREET, LONDON EC2M 1NH. Tel. 01-588 3588 or 01-588 3576. TELEX: 887374

Analysts and Programmers

A Major International Company in the Petrochemical Industry with a first class reputation requires the following additional DP Professionals for a major commercial development project on their in-house IBM mainframe.

SYSTEMS ANALYSTS TO £6,500
Applicants should have at least 3 years in-depth commercial systems design experience and 2 years COBOL programming experience. Knowledge of either the Contracting or Construction Industry would be an advantage. A degree or equivalent is desired.

ANALYSTS/PROGRAMMERS TO £5,500
Minimum of 3 years in-depth COBOL programming experience together with some business systems knowledge. Experience of IBM DOS/VS would be an advantage.
Aged 25-30, the successful applicants are likely to have a degree or equivalent.

PROGRAMMERS TO £4,750
Minimum of 2 years COBOL experience, preferably on IBM equipment using DOS/VS.
Applicants are likely to be 20–25 with 2 'A' levels including mathematics.

TRAINEE PROGRAMMERS TO £3,300
Vacancies exist for trainee COBOL programmers. Minimum of 2 'A' levels including mathematics, aged 18-22.

A comprehensive range of fringe benefits including annual bonus and paid overtime will support the above salaries.

Please send a comprehensive CV, or telephone or write for an application form. All enquiries will be treated in strict confidence and you may indicate companies to which your application should not be sent.

Brian Withers Quote ref C/195

GRS
Garrard Recruitment Service
10, Argyll Street, London W1V 2BQ. Tel: 01-437 6816.

WESTFIELD COLLEGE
(University of London)

DESIGN ENGINEER/ PROGRAMMER)
(MICROCOMPUTERS)

A vacancy exists in the Science Faculty for a Digital Engineer The work involves the design and use of microcomputer systems for teaching and research (80 80 family and LSI 11 at present), as well as general design consultancy to the Faculty

The appointment will be within the salary range £3377 to £4849 including London Weighing (under review).

Applications to Dr J. Buckingham, Personnel Officer, Westfield College, Kidderpore Avenue, Hampstead, London NW3 7ST, as soon as possible.

Software Expertise Ltd

CONSULTANT PROGRAMMERS
Up to £7,500

If you're wondering why we're prepared to offer programmers a systems analyst's salary, the answer is simple
To find the best, you have to offer the best
A couple of years' ago, we set out to build a reputation in a very overcrowded business. We knew there was no shortage of software houses, but we also knew there was a huge short-fall in software expertise. So we decided to invest in the best — and, when you look at the way our client list has grown over those two years, you really can't fault our thinking.
Over the years we've also stuck to the principle of being totally honest with people
We're a small team, not the biggest, but we know our business We think we're a lot more professional than the bulk of software consultancies (at least, our major clients think so). And we also believe there's a lot of room for expansion in software. We hope you share our enthusiasm.
Right now, we're in the market for really good programmers. Men and women who have been in the business for three or more years, have a thorough knowledge of at least two languages and, hopefully, have some solid experience on preferably IBM systems. If you qualify, we'll be offering much more than just a good salary.
We'll be giving you the chance to work on a variety of projects for some of London's largest computer users. In other words, you'll get the high-level involvement without the full-time frustrations. We'll also offer you every opportunity to train and develop your specialist knowledge.
And most important of all, if we like each other, you will form the nucleus of what is arguably the most able and successful young software company in London.
Believe us, if you join our management team, you can forget about £7,500 and start thinking in terms of five figure salaries.
Let's talk.

Software Expertise Ltd., Computer Consultants,
The White House, 140 Tachbrook Street,
London SW1V 2NE
Telephone 01-821 7914

Systems Analyst

High Wycombe, Bucks, C £4,500
E. Gomme Limited, who manufacture G-Plan furniture, have a vacancy for a Systems Analyst in their IBM 370/125 installation.

Applicants, aged 24-28, must have several years' computing experience with at least one year spent in systems analysis, ideally in a manufacturing environment

The successful applicant, who will report to the Systems Manager, will play an important part in the design and implementation of a wide variety of new applications, as well as being involved in the development of existing systems, which include a trial T.P. Order Entry application.

Conditions of service are excellent and assistance will be given with relocation expenses, where appropriate.
Write to the **Company Personnel Manager,**
E. Gomme Limited, P.O. Box 27, High Wycombe, Bucks.

COMPUTER CORRESPONDENT

DATA PROCESSING, the international magazine for corporate and computer management, has a vacancy on its editorial team for an all-round journalist.

The successful applicant can expect a busy and varied working life including the conceiving and writing of original articles, some news reporting, plenty of subbing and proof-reading, attendance at press conferences, opportunity for foreign travel and some commissioning of work.

Write with details of age, education and experience to **Tony Rand, The Editor, "Data Processing", IPC Electrical-Electronic Press Limited, Dorset House, Stamford Street, London SE1 9LU.**

Data Communications Planner
£4,396 rising to £5,077

British Airways has a vacancy for a Senior Technical Officer Planning & Development to carry out a major enhancement programme on their extensive world-wide communications network and realtime computer systems.

The duties involve detailed planning of data transmission, data network management, and data switching facilities on a world-wide scale; the technical evaluation of manufacturers' products and the design of special items of communications equipment.

The work involves travelling to and working for short periods in Saudi Arabia and the Gulf area.

Applicants should have a Higher National Certificate in a related subject or its equivalent and at least 5 years' experience in the data communications field.

The excellent conditions of employment include an inflation-proof pension scheme, sports and social facilities, subsidised restaurants and favourable holiday travel opportunities.

To request an application form please ring 01-897 5490 or write to:

Senior Personnel Officer, Management Services, British Airways, V028 Speedbird House, London Heathrow Airport, Hounslow, Middx TW6 2JA.

British airways

CONTRACT ANALYSTS AND PROGRAMMERS

We wish to recruit a number of Systems Analysts (preferably with Real Time Costing and Production Control experience) and programmers with 2 years + experience in any of the following:

COBOL (any machine) PL1, BAL (preferably CICS), RPGII, FORTRAN

We can offer long or short term assignments with major companies in the UK. If you are looking for good money, prompt payment, continuity of work, etc.

Ring Ann Collins on
01-437 2062/3/4

dp
DP SUPPORT SERVICES LIMITED
Kent House, 87 Regent St, W1

Name
Address
Telephone
Skill

1900 PROGRAMMER AND ANALYST

MOVE ON
MOVE ON-LINE
CITY To £5,500
PLUS SUBSIDISED MORTGAGE SCHEME

With **On-line** development using MAXIMOP in progress our Client — an important financial group — is moving towards a new phase in their DP history.

Four major project areas are at the development stage, giving rise to a lively environment where project team members feel fully involved in each system.

This growth now creates prime opportunities for the following:

PROGRAMMER —With around 3 years' ICL 1900 COBOL experience.

ANALYST —With 3 years' commercial experience, able to take initiative in a young dynamic team.

Career opportunities are of the first order especially for those wishing to increase their expertise in an on-line systems environment.

An excellent financial package includes mortgage scheme, non-contributory pension and free lunches, whilst flexi-time is in operation.

REF. NO. CW/10/15

PROGRAMMERS

EXCELLENT CAREER PROSPECTS
BIRMINGHAM SALARIES TO £4,000 P.A.
PLUS ABOVE AVERAGE FRINGE BENEFITS

Our clients who are the consultancy arm of one of the UK's largest independent computer services organisations are currently enjoying considerable success. Their current commitments are particularly high in systems involving DATA COMMUNICATIONS in commercial systems utilising mini computers. New personnel are actively sought to join this small professional team.

CANDIDATES SHOULD HAVE:

- ★ a minimum of 18 months' in-depth programming experience on mainframe or mini equipment
- ★ a preparedness for limited travel
- ★ an ability to work alone from systems specifications
- ★ a desire to accept career enhancement by progression into systems work.

These positions would ideally suit Programmers in their early 20's who wish to move into a more progressive environment within commercial data processing.

These vacancies are of an urgent nature and interested candidates should contact without delay:
REG HEATH 021-236 3781 REF. NO. CW/10/16

SPECIALIST COMPUTER RECRUITMENT LTD.

BIRMINGHAM 021-236 3781 FREEPOST
Freepost, Equity and Law House, 35-37 Great Charles Street Queensway, Birmingham B3 2BR

MANCHESTER 061-833 0676 FREEPOST
Freepost, Corn Exchange Buildings, Corporation Street, Manchester M4 8BD

LONDON 01-935 0671 FREEPOST 6
Freepost 6, 102, Blandford Street, London W1E 1JZ

SCR

Computing Services Association

Nice And Strong . . .

Nice Salary, People and Conditions
Strong Professional Installation

Analysts and Programmers ***Both to £6,300*** ***Croydon***

Looking for a change of Job?			
Good experience as an Analyst or Programmer?			
Able to travel to Croydon?			
Good — I expect you would like to know . . .			
Is it development work?	YES	Easy Car Parking?	YES
With modern techniques?	YES	Near the station?	YES
Good salary?	YES	Are the offices modern?	YES
Good perks?	YES	Friendly working atmosphere?	YES
Flexitime?	YES	Good social activities?	YES

If all the answers are YES then why the vacancies? — well two years of wage restraint has hit everybody and some people have been forced to move (perhaps that's your problem too?). Move to our client — salaries must be competitive with anyone in the business.

Senior Analyst ***To £6,300 + Benefits***

Probably 5 years' experience in analysis and programming, with a financial systems background. Successful implementation of at least one system. An ability to talk to users and identify and understand their problems.

Lead Programmers (2)

Must have management and project control ability, good motivating skills and strength of character. Technically good COBOL and JCL in an OS environment on 360/370 series.

Analyst ***To £5,200 + Benefits***

Good academic background, probably about 3 years' experience, preferably with some involvement in systems analysis and design or as an analyst/programmer.

Programmers

With 3 years good, solid OS COBOL, on 360/370 series, you can be paid a starting salary at the top of the range.

Well known as a leading company in its field our client needs to find the right people for these jobs now. For more information or the answer to any other questions, telephone our CROYDON office and ask to talk about CW57-7J.

01-686 9693 (24 HOUR ANSAPHONE) | 061 236 2419 FAULKNER HOUSE,
19, PARK STREET, CROYDON, CR9 1TN | FAULKNER STREET, MANCHESTER, M1 4YD.

COMPUTER AND PROFESSIONAL PERSONNEL CONSULTANTS **CAPP ASSOCIATES** LONDON AND MANCHESTER — Computing Services Association

SALES EXECUTIVE SOUTH WEST

c £10K + car

Facilities Management is a rapidly growing and successful systems house specialising in turnkey systems to first time users.

We are about to launch our new area office in the South West and our top man has been assigned to the area to generate new business and assure the success of the branch.

The person we are looking for will assist in this task with a view to eventually taking over the area and running both the sales and administrative functions within the office.

Facilities Management

CONTRACT

Ref 151 — Computer Room Manager required for Northern England c£200 per week. Start now!

Ref 134 — IBM 370 OS operator required for very long contracts in South of England starting in November and December. Good rates and expenses.

Ref 61 — ICL New Range (2900 VME8) operators required for Northern England in November.

Ref 149 — Univac 1100 operator required for night work in Central London. Start November.

Ref 150 — Honeywell OS 2000 operator required for City. Start now!

PERMANENT

REF.	POSITION	MACHINE/SYSTEM	AREA	SALARY
2411	Ops. Supvsr.	Sys. 3/12 OCL	City	To £4000
2376	S/Leader	1901T/Geo. II	C. Surrey	To £4000 Inc
2404	S/Leader	370/145 DOS/VS POWER	City	To £4700 Inc
2428	Jnr. Op.	1902A/Geo. II	C. London	To £3100 Inc
2394	Snr. Op.	1901T/Geo. II	N. London	To £3800 Inc
2427	Operator	370/135 DOS/VS	Middlesex	To £3800 Inc

EFFECTIA GRAVIS

COMPUTERCALL

ATTENTION . . .
COMPUTER ENGINEERING & OPERATIONS PERSONNEL

Can you accept the challenge of employment in a dynamic, young and expanding company?

If so, you are invited to consider joining "COMPUTERCALL LTD" as a **CONTROL CENTRE OPERATOR** and play an important role in providing a unique service to computer maintenance organisations.

COMPUTERCALL provides a centralised operations control centre for computer manufacturers which co-ordinates engineer assignments and defect reporting. COMPUTERCALL also provide critical parts warehousing and a delivery service to support maintenance actions. The service is a continuous 24 hour operation.

COMPUTERCALL needs personnel with knowledge of the computer service environment to fill **CONTROL CENTRE OPERATOR** vacancies. Operators are responsible for receiving telephone calls from equipment users, recording and analysing faults, deciding priorities and contacting the relevant manufacturer's engineer. Duties also include arranging delivery of critical parts and test equipment.

Consider the immense value of this service to the computer maintenance organisations and decide if you wish to get involved and be rewarded with an attractive salary plus a profit sharing scheme directly related to performance.

If you can meet the challenge, call "COMPUTERCALL" any time day or night and discuss this opportunity with one of our senior engineering staff. TELEPHONE 01-568 2086.

Garrett House, 24 Windmill Road, Brentford, Middlesex.

COBOL PROGRAMMER

Salary up to £4,500

We are looking for a programmer aged 22-28 with a minimum of 2 years' Cobol experience — IBM 360/370 background an advantage.

The successful applicant would participate in project work and have the opportunity to be trained in analysis. We offer generous fringe benefits including a subsidised staff mortgage scheme, free lunches, and pension scheme.

If you are interested, please apply giving brief career details to: **Mrs. S. Iver, Personnel Administration Department, Sun Life of Canada, 2/4 Cockspur Street, London SW1. Telephone: 01-930 5400 ext. 221.**

Informatix UK & O'seas Index
Phone 01-409 0468

Informatix Avon House 360 Oxford Street London W1N 9HA Telex 28800 LONDOF G

POSITION	SALARY	EMPLOYER	LOCATION	HARDWARE ENVIRONMENT	SOME OF THE QUALIFICATIONS	REF. NO.
IBM Systems Designers & Programmers	Upwards of $22,000	Software House	U.S. & Canada	IBM 370/OS & Minis	Based in Toronto. This very prominent systems Group offer exciting projects in U.S. and Canada	43/1
Senior Programmers	Contract c.£280 p.w.	Software House	Central London	ICL 1900 & 2960	Nine month contract 1900/G3 with PLAN & COBOL exp. Six month contract with COBOL 2960. Immediate start.	43/2
2960 T.P. Analysts & Programmers	£4,750-£5,750	Communications	Central London	ICL 2960	If you have no T.P. and on-line experience now is your chance to get that vital exposure	43/3
COBOL/BAL Programmers IMS Training	£5,000-£6,500	Aerospace	Herts	IBM 370	IMS Training given to BAL + COBOL Programmers with sound O.S. JCL exp. Important installation.	43/4
Burroughs COBOL Programmers	c. £5,000 + Mortgage	Bankng	City	B.3700	European Banking Group with extensive range of Burroughs Hardware need COBOL Programmers urgently.	43/5
Software Designers & Analysts	Upwards of £10,000	Software House	Belgium & Holland	PDP. O.G. Interdata etc.	Any experience of Data communications, switching or networks an advantage. Exp. of Mini software essential.	43/6
Communications Programmers & Analysts	£11,000 + + car & benefits	Aerospace	Paris	Minis	English speaking environment developing sophisticated communications systems. Mini exp. essential.	43/7
Message Switching	Minimum £12,000 & Accommodation	Communications	Gulf States	PDP 11	Major British Company active throughout Gulf States requires exp. Message/Packet Switching People.	43/8
PL/1 IMS Analysts & Programmers	Negotiable but high	Management Services Facility	South Coast	IBM 370/OS	Ideal locality with first class job interest and opportunity to progress into IMS and data base development.	43/9
Assembler Systems Programmers	£5,000-£7,000	Computer Manufacturer	Herts	Minis and Micros	Assembler programmers with solid exp. on any mini or micro system. This A1 computer manufacturer offers excellent future.	43/10
Mini Software Specialists	£5,000-£8,000 & car	U.S. Computer Manufacturer	West London	PDP 11 & Other minis	U.S. Travel and initial training together with numerous worthwhile perks. Suit career minded long term planners.	43/11
Systems Designers & C.A.D.	High Negotiable & Mortgage	Financial	Herts	IBM 370/OS ICL/1900/G3	PL/I. BAL for the IBM group and PLAN or COBOL for ICL. Mortgage after qualifying period.	43/12
Senior O & M Analyst	Minimum £6,000 & Benefits	U.S. Oil Co.	S.W. London	IBM 370/OS & PDP II	Petrochemical group seek a top O&M person who is presently earning c. £6,000. High responsibility goes with this job.	43/13
I.C.L. 2960 Analysts	£6,000 +	Aviation	Central London	ICL 1900 and 2900	Min. 3 yrs. ICL experience of which 18 months must have been in analysis. Management potential position.	43/14
IMS and CICS Project Managers	£6,000 + Executive Benefits	Management Services Facility	Birmingham	IBM 370/OS	If the Midlands appeals to you this chance to develop CICS + IMS Skills is uniquely desirable.	43/15
Technical Project Managers	At Least £6,000 + car	U.S. Computer Manufactuer	West of London	Minis	Pre and post sales support analysts able to travel throughout Europe on generous per diem expenses.	43/16
Assembler and PL/1 Programmers	c. 6,750 + O'seas Allowance	Software House	U.K. or Europe	Series 1 & 370/OS	Ground floor opportunity to establish expertise with IBM's new series 1 computer. Excellent O'seas conditions.	43/17
Senior Recruitment Consultant	Basic £6,000 + High Comm.	Informatix	Central London		Computer Recruitment exp. is essential. Aggressive and determined consultants will earn top rates in this field.	41/18

COMPILER ASSEMBLER PROGRAMMERS

WEST OF LONDON

Permanent to £8,500
Contract c. £200 p.w.

A major U.S. Mini Computer Manufacturer is developing and expanding its compiler facilities by upgrading and designing existing and new compilers. Their immediate requirements are for two experienced Assembler Software programmers with relevant in-depth compiler writing experience. The more senior post is for a Project Manager, and the second opening would ideally suit a senior systems programmer.

Whilst Assembler programming experience in a Mini computer environment is essential, any prior exposure to a high-level language would be beneficial.

Both positions offer exceptional prospects to develop within the Software development group of this very successful Computer Manufacturer. Several attractive fringe benefits accompany the above average salaries being offered.

Interviews will be held in London during the first 2 weeks of November and prospective applicants should telephone Infomatix for full details.

Ref. 43/19

1900 PROGRAMMER AND ANALYST
MOVE ON
MOVE ON-LINE
CITY To £5,500
PLUS SUBSIDISED MORTGAGE SCHEME

With **On-line development** using MAXIMOP in progress our Client — an important financial group — is moving towards a new phase in their DP history.

Four major project areas are at the development stage, giving rise to a lively environment where project team members feel fully involved in each system.

This growth now creates prime opportunities for the following:

PROGRAMMER —With around 3 years' ICL 1900 COBOL experience.

ANALYST —With 3 years' commercial experience, able to take initiative in a young dynamic team.

Career opportunities are of the first order especially for those wishing to increase their expertise in an on-line systems environment.

An excellent financial package includes mortgage scheme, non-contributory pension and free lunches, whilst flexi-time is in operation.

REF. NO. CW/10/15

PROGRAMMERS
EXCELLENT CAREER PROSPECTS
BIRMINGHAM SALARIES TO £4,000 P.A.
PLUS ABOVE AVERAGE FRINGE BENEFITS

Our clients who are the consultancy arm of one of the UK's largest independent computer services organisations are currently enjoying considerable success. Their current commitments are particularly high in systems involving DATA COMMUNICATIONS in commercial systems utilising mini computers. New personnel are actively sought to join this small professional team.

CANDIDATES SHOULD HAVE:
* a minimum of 18 months' in-depth programming experience on mainframe or mini equipment
* a preparedness for limited travel
* an ability to work alone from systems specifications
* a desire to accept career enhancement by progression into systems work.

These positions would ideally suit Programmers in their early 20's who wish to move into a more progressive environment within commercial data processing.

These vacancies are of an urgent nature and interested candidates should contact without delay:
REG HEATH 021-236 3781 REF. NO. CW/10/16

SPECIALIST COMPUTER RECRUITMENT LTD.
BIRMINGHAM 021-236 3781 FREEPOST
Freepost, Equity and Law House, 35-37 Great Charles Street Queensway, Birmingham B3 2BR
MANCHESTER 061-833 0676 FREEPOST
Freepost, Corn Exchange Buildings, Corporation Street, Manchester M4 8BD
LONDON 01-935 0671 FREEPOST 6
Freepost 6, 102, Blandford Street, London W1E 1JZ

SCR

Computing Services Association

Nice And Strong . . .
Nice Salary, People and Conditions
Strong Professional Installation
Analysts and Programmers *Both to £6,300* *Croydon*

Looking for a change of Job?
Good experience as an Analyst or Programmer?
Able to travel to Croydon?
Good — I expect you would like to know . . .

Is it development work?	YES	Easy Car Parking?	YES
With modern techniques?	YES	Near the station?	YES
Good salary?	YES	Are the offices modern?	YES
Good perks?	YES	Friendly working atmosphere?	YES
Flexitime?	YES	Good social activities?	YES

If all the answers are YES then why the vacancies? — well two years of wage restraint has hit everybody and some people have been forced to move (perhaps that's your problem too?). Move to our client — salaries must be competitive with anyone in the business.

Senior Analyst *To £6,300 + Benefits* *Lead Programmers (2)*

Probably 5 years' experience in analysis and programming, with a financial systems background. Successful implementation of at least one system. An ability to talk to users and identify and understand their problems.

Must have management and project control ability, good motivating skills and strength of character. Technically good COBOL and JCL in an OS environment on 360/370 series.

Analyst *To £5,200 + Benefits* *Programmers*

Good academic background, probably about 3 years' experience, preferably with some involvement in systems analysis and design or as an analyst/programmer.

With 3 years good, solid OS COBOL, on 360/370 series, you can be paid a starting salary at the top of the range.

Well known as a leading company in its field our client needs to find the right people for these jobs now. For more information or the answer to any other questions, telephone our CROYDON office and ask to talk about CW57-7J.

01-686 9693 (24 HOUR ANSAPHONE) | 061 236 2419 FAULKNER HOUSE,
19, PARK STREET, CROYDON, CR9 1TN | FAULKNER STREET, MANCHESTER, M1 4YD

COMPUTER AND PROFESSIONAL PERSONNEL CONSULTANTS
CAPP ASSOCIATES
LONDON AND MANCHESTER
Computing Services Association

SALES EXECUTIVE SOUTH WEST
c £10K + car

Facilities Management is a rapidly growing and successful systems house specialising in turnkey systems to first-time users

We are about to launch our new area office in the South West and our top man has been assigned to the area to generate new business and assure the success of the branch

The person we are looking for will assist in this task with a view to eventually taking over the area and running both the sales and administrative functions within the office

Facilities Management
3 Atlas House Chorley Old Road Bolton BL1 4JR
Tel (0204) 491310

CONTRACT

Ref 151 Computer Room Manager required for Northern England c£200 per week. Start now!

Ref 134 IBM 370 OS operator required for very long contracts in South of England starting in November and December. Good rates and expenses.

Ref 61 ICL New Range (2900 VME8) operators required for Northern England in November.

Ref 149 Univac 1100 operator required for night work in Central London. Start November.

Ref 150 Honeywell OS 2000 operator required for City. Start now!

PERMANENT

REF.	POSITION	MACHINE/SYSTEM	AREA	SALARY
2411	Ops. Supvsr.	Sys. 3/12 OCL	City	To £4000
2376	S/Leader	1901T/Geo. II	C. Surrey	To £4000 Inc
2404	S/Leader	370/145 DOS/VS POWER	City	To £4700 Inc
2428	Jnr. Op.	1902A/Geo. II	C. London	To £3100 Inc
2394	Snr. Op.	1901T/Geo. II	N. London	To £3800 Inc
2427	Operator	370/135 DOS/VS	Middlesex	To £3800 Inc

EFFECTIA GRAVIS

COMPUTERCALL

ATTENTION . . .
COMPUTER ENGINEERING & OPERATIONS PERSONNEL

Can you accept the challenge of employment in a dynamic, young and expanding company?
If so, you are invited to consider joining "COMPUTERCALL LTD" as a **CONTROL CENTRE OPERATOR** and play an important role in providing a unique service to computer maintenance organisations.
COMPUTERCALL provides a centralised operations control centre for computer manufacturers which co-ordinates engineer assignments and defect reporting. COMPUTERCALL also provide critical parts warehousing and a delivery service to support maintenance actions. The service is a continuous 24 hour operation.
COMPUTERCALL needs personnel with knowledge of the computer service environment to fill **CONTROL CENTRE OPERATOR** vacancies. Operators are responsible for receiving telephone calls from equipment users, recording and analysing faults, deciding priorities and contacting the relevant manufacturer's engineer. Duties also include arranging delivery of critical parts and test equipment
Consider the immense value of this service to the computer maintenance organisations and decide if you wish to get involved and be rewarded with an attractive salary plus a profit sharing scheme directly related to performance.
If you can meet the challenge, call "COMPUTERCALL" any time day or night and discuss this opportunity with one of our senior engineering staff. TELEPHONE 01-568 2086.

Garrett House, 24 Windmill Road, Brentford, Middlesex.

COBOL PROGRAMMER
Salary up to £4,500

We are looking for a programmer aged 22-28 with a minimum of 2 years' Cobol experience — IBM 360/370 background an advantage.

The successful applicant would participate in project work and have the opportunity to be trained in analysis. We offer generous fringe benefits including a subsidised staff mortgage scheme, free lunches, and pension scheme.

If you are interested, please apply giving brief career details to: **Mrs. S. Iver, Personnel Administration Department, Sun Life of Canada, 2/4 Cockspur Street, London SW1. Telephone: 01-930 5400 ext. 221.**

Informatix UK & O'seas Index
Phone 01-409 0468
Informatix Avon House 360 Oxford Street London W1N 9HA Telex 28800 LONDOF G

POSITION	SALARY	EMPLOYER	LOCATION	HARDWARE ENVIRONMENT	SOME OF THE QUALIFICATIONS	REF. NO.
IBM Systems Designers & Programmers	Upwards of $22,000	Software House	U.S. & Canada	IBM 370/OS & Minis	Based in Toronto. This very prominent systems Group offer exciting projects in U.S. and Canada	43/1
Senior Programmers	Contract c.£280 p.w.	Software House	Central London	ICL 1900 & 2960	Nine month contract 1900/G3 with PLAN & COBOL exp. Six month contract with COBOL 2960. Immediate start.	43/2
2960 T.P. Analysts & Programmers	£4,750-£5,750	Communications	Central London	ICL 2960	If you have no T.P. and on-line experience now is your chance to get that vital exposure	43/3
COBOL/BAL Programmers IMS Training	£5,000-£6,500	Aerospace	Herts	IBM 370	IMS Training given to BAL + COBOL Programmers with sound O.S. JCL exp. Important installation.	43/4
Burroughs COBOL Programmers	c. £5,000 + Mortgage	Bankng	City	B.3700	European Banking Group with extensive range of Burroughs Hardware need COBOL Programmers urgently.	43/5
Software Designers & Analysts	Upwards of £10,000	Software House	Belgium & Holland	PDP, D.G. Interdata etc.	Any experience of Data communications, switching or networks an advantage. Exp. of Mini software essential.	43/6
Communications Programmers & Analysts	£11,000++ car & benefits	Aerospace	Paris	Minis	English speaking environment developing sophisticated communications systems. Mini exp. essential.	43/7
Message Switching	Minimum £12,000 & Accommodation	Communications	Gulf States	PDP 11	Major British Company active throughout Gulf States requires exp. Message/Packet Switching People.	43/8
PL/1 IMS Analysts & Programmers	Negotiable but high	Management Services Facility	South Coast	IBM 370/OS	Ideal locality with first class job interest and opportunity to progress into IMS and data base development.	43/9
Assembler Systems Programmers	£5,000-£7,000	Computer Manufacturer	Herts	Minis and Micros	Assembler programmers with solid exp. on any mini or micro system. This A1 computer manufacturer offers excellent future.	43/10
Mini Software Specialists	£5,000-£8,000 & car	U.S. Computer Manufacturer	West London	PDP 11 & Other minis	U.S. Travel and initial training together with numerous worthwhile perks. Suit career minded long term planners.	43/11
Systems Designers & C.A.D.	High Negotiable & Mortgage	Financial	Herts	IBM 370/OS ICL/1900/G3	PL/I, BAL for the IBM group and PLAN or COBOL for ICL. Mortgage after qualifying period.	43/12
Senior O & M Analyst	Minimum £6,000 & Benefits	U.S. Oil Co.	S.W. London	IBM 370/OS & PDP II	Petrochemical group seek a top O&M person who is presently earning c. £6,000. High responsibility goes with this job.	43/13
I.C.L. 2960 Analysts	£6,000+	Aviation	Central London	ICL 1900 and 2900	Min. 3 yrs. ICL experience of which 18 months must have been in analysis. Management potential position.	43/14
IMS and CICS Project Managers	£6,000 + Executive Benefits	Management Services Facility	Birmingham	IBM 370/OS	If the Midlands appeals to you this chance to develop CICS + IMS Skills is uniquely desirable.	43/15
Technical Project Managers	At Least £6,000 + car	U.S. Computer Manufactuer	West of London	Minis	Pre and post sales support analysis able to travel throughout Europe on generous per diem expenses.	43/16
Assembler and PL/1 Programmers	c. 6,750 + O'seas Allowance	Software House	U.K. or Europe	Series 1 & 370/OS	Ground floor opportunity to establish expertise with IBM's new series 1 computer, Excellent O'seas conditions.	43/17
Senior Recruitment Consultant	Basic £6,000 + High Comm.	Informatix	Central London		Computer Recruitment exp. is essential. Aggressive and determined consultants will earn top rates in this field.	41/18

COMPILER ASSEMBLER PROGRAMMERS
WEST OF LONDON **Permanent to £8,500**
Contract c. £200 p.w.

A major U.S. Mini Computer Manufacturer is developing and expanding its compiler facilities by upgrading and designing existing and new compilers. Their immediate requirements are for two experienced Assembler Software programmers with relevant in-depth compiler writing experience. The more senior post is for a Project Manager, and the second opening would ideally suit a senior systems programmer.

Whilst Assembler programming experience in a Mini computer environment is essential, any prior exposure to a high-level language would be beneficial.

Both positions offer exceptional prospects to develop within the Software development group of this very successful Computer Manufacturer. Several attractive fringe benefits accompany the above average salaries being offered.

Interviews will be held in London during the first 2 weeks of November and prospective applicants should telephone Infomatix for full details.

Ref. 43/19

£6,000 SCIENTIFIC PROGRAMMER Luton

£3.7/£5K CORAL PROGRAMMERS Derby

£3.5-£5K COBOL PROGRAMMERS Plymouth

168 Finchley Road, London, NW3 6HP

COMPUTECH 01-794 0202

IBM OPERATIONS

S LDR	145 DOS/VS POWER	2 shift	City	£4750	Ref 213
S LDR	135 DOS/VS GRASP	3 shift	Surrey	£3900	Ref 182
S OP	135 DOS/VS POWER	2 shift	E Ldn	£3800+	Ref 217
S OP	135 DOS/VS GRASP	3 shift	City	£3800+	Ref 190
S OP	135 DOS/VS POWER	2 shift	S E Ldn	£4100	Ref 216
S OP	135 DOS/VS	3 shift	City	£3800	Ref 218
OP	Univac 9030 DOS	2 shift	Essex	c£4300	Ref 214
OP	135 DOS/VS GRASP	3 shift	Mddx	£3800	Ref 212
OP	135 DOS/VS POWER	2 shift	S E Ldn	£3800	Ref 218
OP	135 DOS/VS GRASP	3 shift	City	£3500	Ref 190
OP	125 DOS/VS	DAYS & o/t	W Ldn	c£3800	Ref 215
OP	135 DOS/VS GRASP	2 shift	BERMUDA	£NEG	Ref 196
S LDR	148 OSVS1	3 shift	Mddx	c£5000	Ref 192
OP	145 OSVS1	3 shift	N Ldn	£3300	Ref 219

Tel: 01-353 8201/3 or write to: 47 Essex Street, London, WC2R 3JF

X·Calibur COMPUTER SERVICES

OPERATING STAFF

Up to £5,218 plus shift allowance located at HAROLD WOOD, Essex

Due to expansion to two-shift working, operating staff at all levels are required to supplement our existing team utilising an ICL 1904S machine operating under George 3

SHIFT LEADER (Ref. 1541A). £4,408-£5,218

At least two years' George 3 operation. Some supervisory experience. Age 22+

DEPUTY SHIFT LEADER (Ref. 1541B) £3,524-£4,408)

Capable of controlling workload in Shift Leader's absence. At least twelve months' experience on comparable equipment

OPERATOR (Ref. 1541C) £2,989-£3,524)

Previous ICL experience an advantage. Age 18+

All salaries include London Weighting and pay supplements.

Job description and application form quoting appropriate reference available from:

Regional Personnel Officer
North East Thames Regional Health Authority
40 Eastbourne Terrace
London W2 3QR. Tel. 01-262 8011, Ext. 143

CLOSING DATE: NOVEMBER 10th, 1977

NETRHA

Help us to design and implement an:

INTERACTIVE COMPUTING SERVICE

To serve 1000 staff at 50 remote sites.

AN OPPORTUNITY TO BE TRAINED IN AND USE **DATABASE AND TELECOMMUNICATIONS** SOFTWARE in the development of major systems for naive users.

Two posts based in Huntingdon are available for graduate calibre staff in the **APPLICATIONS SOFTWARE DESIGN AND IMPLEMENTATION** Team

PROJECT LEADER
Ref RP 30 (H5A009) Up to £7,500

Experienced Chief Programmer to lead a small team of programmers. Knowledge of COBOL, FORTRAN and an assembler language

SENIOR PROGRAMMER/DESIGNER
Ref RP 22 (H5A 038) Up to £6,000

Experience of program design and implementation of systems written in a High Level Language.
Experience of interactive computing.

GENEROUS RELOCATION EXPENSES

Application forms (returnable by 10th November 1977) are obtainable from the address below or by telephoning Huntingdon (0480) 56181 — Ext. 252.

Personnel Department
ANGLIAN WATER AUTHORITY
Diploma House, Grammar School Walk
Huntingdon, Cambs. PE18 6NZ

More than just a living, more a way of life.

Too often in this hurly-burly world, life is divided into two separate areas–your job and your recreation–with no link between them. At NCR we combine the best of both worlds.

At our unique location on the coast close to all the premier Scottish golf courses, with motorway links to Edinburgh and Glasgow, and with the ski slopes on the horizon we can offer a quality of life second to none. And we offer stimulation at work–our innovations in computer technology are rapidly being acknowledged in the data processing world.

To maintain our pace of development we need new computer specialists, qualified to degree standard, in:

Basic Software Design

The people we require will have some experience in assembly level programming and in one or more of the following areas:–

- Programmatic control of electromechanical devices
- Diagnostic programming
- Mini/micro computer operating systems
- I/O drivers
- Transaction programming languages

The rewards with NCR, in addition to high job involvement and excellent social amenities, include a negotiable salary, 35 hour week, with the possibility of paid overtime, pension and life assurance schemes, subsidised catering facilities and generous relocation assistance.

In the first instance, please write giving full career and personal details to:–

Ian Hume,
Personnel & Employee Relations,
NCR Manufacturing Division,
Kingsway West,
DUNDEE DD2 3XX.

NCR

UNIVERSITY OF SURREY
COMPUTING UNIT
SYSTEMS PROGRAMMER
(Communications)

We are looking for a lively Programmer/Analyst to join a small team involved with design and improvement for systems using mainframes, minis and micro computers. The post offers real scope for initiative, projects envisaged or under development including packet switched networks and multiprocessor and distributor processor configurations. The Computing Unit currently operates two ICL 1903 computers in both batch and multiaccess modes and a variety of mini and micro computers; replacement of the 1900 equipment is expected in the near future.

Applicants (male or female) who should be suitably qualified, should have had wide experience of computers and particular knowledge of both the hardware and software of communications systems would be advantageous.

The salary scale will be up to £6627 per annum with four weeks' annual leave plus additional days at Christmas and Easter.

Applications giving FULL DETAILS (including the names and addresses of two referees) should be sent to the Assistant Secretary (Personnel), University of Surrey, Guildford, Surrey GU2 5XH or telephone Guildford 71281, ext 488 for further information.

PROGRAMMERS
WEST COUNTRY
1900 COBOL
c £4000

Phone 01-439 6481
(24 hours)
EFFECTIA GRAVIS
Personnel Consultants

CAPITAL APPTS.
COMPUTER SERVICE ENGINEERS
Phone for free jobs list
all areas
SALARIES TO £6,000
34, Percy St. London, W1
637 5551 day; 445 0118 eve

Data Communications

Atkins Computing have become established as one of the leading timesharing and remote access service companies in the U.K. with several regional branches and a link into Europe. As part of our planned growth we need a Communications Technician to assist in the development and maintenance of our computer based data communications network. The person appointed should be able to act on his/her own initiative and responsibilities will include network supervision, fault diagnosis, troubleshooting and first line repairs by board replacement.

Candidates should preferably have some experience of Digital systems and a relevant technical qualification such as City & Guilds Telecommunications.

We offer progressive employee benefits, pleasant working conditions and relocation assistance where necessary.

Interested? Then contact Alan Lewis, Atkins Computing Services Limited, Woodcote Grove, Ashley Road, Epsom, Surrey KT18 5BW. Telephone Epsom 40421 extension 2739.

Atkins Computing

PROGRAMMER ANALYSTS FOR MINICOMPUTER APPLICATIONS

SALARIES UP TO £6,500 P.A.

Requirements are a minimum of 2 years' commercial application programming experience using **RPGII or COBOL.**

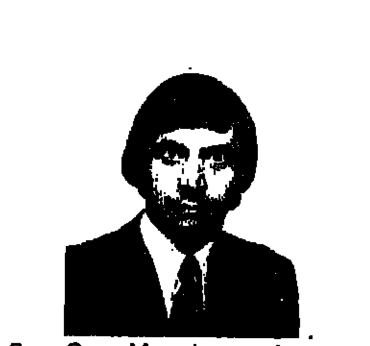
Programmers and programmer-analysts will work in project teams on a variety of applications using sophisticated disk-based minicomputers. Project work is largely self-contained with each programmer being responsible for his own hands-on testing on site.

Home base is Leatherhead, Surrey, but about 80% of the time will be spent at customer sites in London and the Home Counties. Standards are high but so are salaries. Working environment and advanced potential are good.

PLEASE TELEPHONE LEATHERHEAD 79333

EMS have over £15 million new jobs available

That's over 20 jobs for each candidate at current response levels
With the widest UK vacancies coverage in the entire industry—
How can YOU afford not to be on file with EMS? We get results!
Apply today — Or come and attend one of our regional meetings next week.
Let's talk about how we can give you exactly what you're looking for



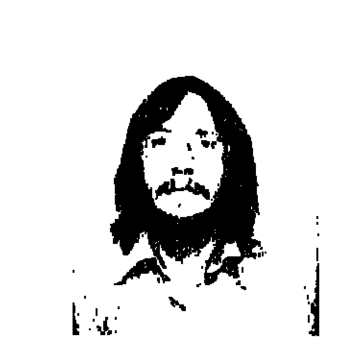
C. G. Marples. A new Staffordshire position

Malcolm Evans joins a new Lancashire group

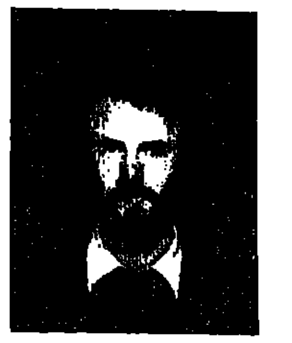
Bruce Hughes had greatly improved prospects with a new Glasgow group

Rita Harrigan joins a West Country engineering group

Graham Stevens takes a new Yorkshire Honeywell vacancy



C. Lindley moves from Beds. to a Birmingham engineering group



D. Page joins a Leics. textile group

William Cleveland joins a Surrey chemical group

LONDON: WEDNESDAY 10.00 to 20.00
CROYDON: THURSDAY 10.00 to 19.00

ROYAL SCOTT HOTEL
KING'S CROSS ROAD, LONDON
Phone 01-278 2434

AERODROME HOTEL
PURLEY WAY, CROYDON
01-688 5185

WEDNESDAY: 10.00 to 19.00
THURSDAY: 10.00 to 19.00

NEW EMS DATA CENTRE
9th Floor TRICORN HOUSE
5 WAYS ROUNDABOUT, BIRMINGHAM

Walk in — Coffee, etc. available and a warm welcome from all our staff — watch this centre during 1978

FRIDAY: LEEDS 10.00 to 18.00
FRIDAY: GLASGOW 10.00 to 18.30

MERRION HOTEL
MERRION CENTRE, LEEDS
Phone 0532-39191

GROSVENOR HOTEL
BOTANIC GARDENS, GLASGOW
Phone: 041-334 8141

The next 2 pages offer just a tiny selection of the many attractive vacancies EMS have waiting for you, and an application form is included. Complete it today. All expenses refunded on a very "attractive scale" for successful candidates. It pays to use EMS

TOP EMS SALES VACANCIES £8k-£15k

Product Ranges:

Turnkey Systems	**Consulting/Contract Services**
Timesharing & Packages	**Recruitment**
Software Development	**Facilities Management**

To continue our high expansion rate, we urgently require experienced Salesmen in any of the above fields to work on a wide range of marketing activites. Each salesman can gain sound experience promoting all of these product ranges, as well as having a substantially larger range of facilities to market to each client.

A sound understanding of business practices will be required, along with the ability to communicate fluently with singular or group clients when marketing company services. Equally, we will be seeking evidence of sales experience to date in order to judge your likely effectiveness within our group. We are only seeking highly motivated salesmen, keen to progress and secure a good career position in a rapidly expanding group and able to earn a top salary as a result of personal sales successes to a wide variety of industrial and commercial clients. To gain a position with EMS, you must already have at least 1 year's sales experience, a minimum 5 years' DP experience and be prepared to work often, long, arduous hours at varying UK locations in order to secure a solid sales track record. We offer a real opportunity of achieving top level commission earnings based on you own abilities to sell DP services. We operate no restrictive earnings cut-offs. Equally, we cover the entire UK. All experienced Consultancy, Timerharing or Turnkey Systems Salesmen should contact EMS without delay. We have opportunities unrivalled anywhere.

PACKAGE DEVELOPMENT
ATTRACTIVE SALARIES PLUS BONUS

EMS are currently working on the development of a wide range of applications packages, including Sales Order Processing, Financial Management Systems, Stock/Production Control, Payroll and various Ledger Systems. Equally, we are retained to undertake numerous custom-built systems for early development and delivery during the new year. A large new Data Centre devoted almost exclusively to Turnkey Systems and Software Development has been opened in Birmingham to control and co-ordinate all UK activities. We seek staff of all levels to assist with the design and development of a wide range of business packages. Equally, successful candidates will have the opportunity of working with the first Honeywell Level 6/43 delivered to a European Consultancy. Work on 1980's systems during 1978 with EMS.

Consultant: Denis Filby

RECRUITMENT CONSULTANTS
BIRMINGHAM TO £7000

Candidates with at least 5 years' DP experience in Systems and Programming are sought to assist with the development of our Marketing Strategy for an expanding recruitment division. Apart from having a dynamic sales personality for either direct client marketing or telephone selling, candidates should have sufficient knowledge of computing to be capable of carrying out in depth candidate interviews where required and presenting an informative accurate, précis of each shortlisted applicant to a retaining client. EMS also offer a £½m. technical equipment back up to our recruitment staff, unrivalled elsewhere throughout Europe. High earnings are available for skilful, motivated prospective Recruitment Consultants. Each candidate must possess a current driving licence and own a car. We offer in turn, absorbing, interesting positions not to be matched elsewhere and luxury data centre working conditions which have aroused the envy of all visitors to date. Why take third best? Try EMS. If you are good enough at this point in time, you could not get a better position anywhere!

Consultant: John Wood

HONEYWELL ANALYSTS AND PROGRAMMERS
TO £7000 UK

EMS are the largest Honeywell Support Consultancy throughout the U.K., working on a wide range of client applications support projects at varying locations including London, Essex, Herts., Surrey, Birmingham, Staffs, Manchester, Lancs and Yorkshire, etc. Our rapidly expanding group needs a wide variety of staff with or without Honeywell knowledge as training is given to otherwise suitable candidates, to support our consulting activities. Experience of IDS, TDS, GCOS would be especially attractive to us. We offer varying employment ranging from supporting Turnkey Systems to Consulting projects in applications or Software Development areas and Package Development. Excellent prospects for the future exist for conscientious, motivated candidates with adequate salaries in addition.

Consultant: Denis Filby

SYSTEMS AND PROGRAMMING CONSULTANTS — EMS TIMESHARING
ICL experience essential — Midlands & North to £6000

EMS are just about to launch a new timesharing service with a wide range of applications packages, or if required, custom-built systems, for users throughout the Midlands and North. Substantial investment has already been made with an initial large 2904 order and possible New Range to follow. Having a series of large successful consulting support divisions already established, we envisage becoming a major timesharing and bureau force during the next 2 years. We have the capital, the equipment and support staff to help us reach the top of this market rapidly. What we probably do not have is you with your current timesharing or bureau experience, and we probably will have when you complete the application form included with this advert.

Consultant: Niall Bradley/Don Watkins

IBM Operator/ Shift Leader Surrey Minimum £3200

Candidates must be experienced on IBM DOS/ GRASP and be educated to 'O' Level standard in Maths and English. The successful candidate will, after 2 or 3 months' training, be responsible for a shift of 1 other person initially. Multi-programming would be an advantage. A salary review will take place after three months. Duties involved include all normal S/L functions and liaison with bureau customers outside working hours.
Consultant: Selina Mills.

Sales Support Programmers & Analysts Edinburgh To £5500

Minimum 'A' Level qualifications will apply. Candidates will be car owners with current driving licences and show a good aptitude for client liaison. Duties will include feasibility studies, writing proposals on post sales consulting. Basically, you would advise and guide clients on new hardware ranges. Both Analysts and Programmers must have at least 2 years' COBOL or ALGOL programming experience.
Consultant: Selina Mills.

IBM 370 PL/1 Analysts/ Programmers Lancashire To £7000

Any experience of IMS would be especially welcomed. We have urgent, large scale requirements for a leading industrial group about to embark upon a major systems development exercise. Experience of working in a manufacturing industry would be advantageous. Staff will be expected to work in large project teams, involving tight schedule controls. Opportunities also exist for travelling throughout the U.K. to other group sites if required during latter 1978. Attractive salaries will be paid to a wide range of applications and software support staff with 2 years' and more practical experience.
Consultant: Niall Bradley.

ICL Project Leader SW London To £6500

Ideally, candidates will have New Range experience, but not essentially. Otherwise our client seeks good experience in a commercial environment on ICL 1900. The successful applicant will be capable of handling a project team doing conversion of batch to ICL 2960 and be in charge of 4 analysts and 3 programmers.
Consultant: Don Walklate.

Systems Programmers Cambs To £6000

Both OS and DOS experienced staff are sought for detailed systems programming duties with an engineering group. Opportunities exist for additional database involvement.
Consultant: Don Walklate.

Leading Vacancies Middlesex To £6500

Project Leaders, Senior Analysts, Analysts, Program Designers, Chief Programmers and Programmers.
Opportunities exist with a large group, substantially increasing their investment in modern, sophisticated hardware, for a wide range of experienced DP staff. Experience in the following areas is urgently required: Production Control, On-line/Real time Systems, Database development, general commercial Accounting and Sales Order Processing, down to COBOL programming. Opportunities not to be missed in the Middlesex area.
Consultant: Selina Mills/Carol Proudman.

IBM Programmers Derby To £4500

Our clients require a number of additional Programmers and Programmer/Analysts to work in small project teams split, each team 50% development, 50% maintenance. Projects generally are commercial batch work, Payroll, Accounts, Sales, Stores, etc. Language experience should be ASSEMBLER, COBOL or PL/1. Some on-line development is envisaged within the next 2 years.
Consultant: Selina Mills.

Systems Analysts West Midlands To £4400

Preference will be for candidates educated to at least HND level. The main activities of systems development include investigation of existing systems and assessment of future requirements. Preparation of initial reports and agreements with users. Preparation of individual program specifications including test data. Systems testing and Parallel/Pilot running and compilation of time schedules which must be adhered to.
Consultant: John Wood.

ICL New Range Programmers South West & West Country To £7000

We urgently need staff experienced on New Range for a number of large users, including manufacturers and bureaux. Vacancies offer permanent employment or contract status, according to individual experience. Work functions include working on new application systems, developing new operating software, compiler design, emulation systems and a wide variety of technical and scientific functions. Attractive fringe benefits also exist with leading clients for contract staff.
Consultant: Niall Bradley.

Honeywell 2000 COBOL Programmers London To £6000

EMS urgently require 5 more experienced H2000 COBOL Programmers to work on distribution and accounting programs assisting a very large U.K. user. A minimum 2 years' programming experience is desirable with at least 1 year on H2000. Attractive fring benefits also available.
Consultant: Niall Bradley/Denis Filby.

IBM 370 PL/1 & Assembler South Midlands To £7000

Any experience of IMS would be especially welcomed. We have urgent, large-scale requirements for a leading industrial group about to embark upon a major systems development exercise. Experience of working in a manufacturing industry would be advantageous. Staff will be expected to work in large project teams, involving a tight schedule control. Opportunities also exist for travelling throughout the U.K. to other group sites if required during latter 1978. Attractive salaries will be paid to a wide range of applications and software support staff with 2 years' and more practical experience.
Consultant: Niall Bradley.

IBM Analyst Manchester To £4800

Good commercial experience in an IBM environment is sought. Ideally applicants should have worked at least 2 years in a similar position. The group have an international clientele and supply engineering products to a large consumer market.
Consultant: Don Walklate.

IBM System 3 DOS Programmer Holland

Candidates should be educated to at least 'A' level standard and be experienced in both COBOL or RPGII. Marketing and Finance knowledge is essential. The position is with a Dutch subsidiary of a major European group. Adequate relocation assistance will be given.
Consultant: John Wood.

ICL 1900 COBOL Programmers West Country To £5000

A small Gloucestershire bureau has vacancies for additional Programmers to assist with developing client accounts. Candidates will be given appropriate applications training where necessary. Opportunities exist for both Junior and Senior staff working in a very popular location with good middle term career prospects.
Consultant: John Wood.

Business Analyst Staffs Analyst/Programmer Wilts £4000-£5500

Hardware preference will be for ICL COBOL in a manufacturing systems environment using on-line and RJE. The Analyst/Programmer will be required to investigate and design minor projects either alone, or as part of a project team. Some programming will also be required. The position would suit a Programmer with 2 years' experience wishing to move into Systems Analysis.
The Business Analyst will be responsible for all systems development within the Willenhall area, reporting to the Chief Systems Analyst at Swindon. Applications will be broad but related to Engineering/Manufacturing in content, and are likely to be on-line to the Swindon mainframe via an RJE terminal.
Consultant: Don Walklate.

Top Hardware Salesmen Entire U.K. To £15000

Experienced hardware salesmen, accustomed to selling in excess of £500,000 worth of mainframes each year, are required to assist with market development by a leading International manufacturer. Our client in total has the widest range of products available and already is enjoying a substantial sales boom. Vast markets currently exist for our client's products, throughout the U.K. Exciting new products are adding substantially to marketing impact and assisting the group to increase penetration of competitors' accounts. Equally, with substantial package development support from a leading U.K. software house, sales during 1978 look very attractive in prospect. Numerous salesmen this year have been hitting record levels, some with multi-million pound accounts. Take advantage of these vacancies at an early stage.
Consultant: John Wood.

IBM Senior Ops, Ops Middx. To £4700

A minimum 18 months' experience is required with OS/VS1. Knowledge in 370 range. The company currently works a 3 shift system. Good progress prospects exist.
Consultant: Anne Lonnell.

Analysts, Chief Prog & Prog South Wales To £4500

Any major hardware or PDP experience will be adequate, preference being for Honeywell or ICL. Applications centre mainly around Financial, Manufacturing and Production Control and Payroll. Analysts will be expected to maintain some existing financial systems running in batch mode. Equally, you will be involved in new financial systems to be implemented on new equipment with on-line enquiry playing an important role. You will also be involved in modifying/implementing various packages in addition to specifying new system requirements. Specialist manufacturing Analysts will take responsibility for new manufacturing systems to be implemented on new equipment with accent of 'on-line'. You must ensure a high level of documentation standards. Programmers with NCR experience are also required, reporting to the chief Programmer and maintaining existing NEAT 3 Programs in batch mode. Equally, programmers will convert and rewrite existing programs to either BASIC plus or COBOL. You must be able to make a contribution to the running of a small programming department, including the training of junior personnel.
Consultant: John Wood.

Operations Manager Herts To £5250

ICL 2903/4 experience would be particularly advantageous, as would some experience of Stock and Production Control Systems in a manufacturing organisation. Duties will include supervision of all staff in the computer room and data prep areas. Also you will be responsible for job scheduling, ordering and maintaining equipment media stocks, maintaining operator standards, ensuring that the manufacturer maintains his service commitments and be capable of operating the 2903 in the event of staff shortages.
Consultant: Selina Mills.

Systems Programmers Herts To £4500

We seek an experienced PL/1 Systems Programmer to work on IBM 370 using DOS/VS POWER to maintain current software, while and test software as and when required; to evaluate and recommend software packages, to monitor current industrial facilities of interest to the company and, to determine causes of computer software and hardware failures.
Consultant: Don Walklate.

6 IBM Programmers Norwich To £4500

Essentially, candidates will have IBM OS or DOS experience, a minimum 'A' Level qualifications and ASSEMBLER or COBOL. Equally, any CICS or DL/1 experience would be advantageous. Systems Programmers will support and maintain all systems software and libraries, apart from CICS. A CICS Programmer is required to write and test ASSEMBLER CICS programs in one of two project teams. Batch programmers will write, test and maintain batch ASSEMBLER programs.
Consultant: Don Walklate

ICL COBOL/PLAN Programmers Yorkshire To £6000

Clients require a number of experienced Programmers to work on commercial and industrial applications systems. A knowledge of PLAN is required. Applications generally include Sales Order Processing, Nominal Ledgers, Process Control, Stock Control, etc. Equally, candidates with ICL COBOL bureau experience would be of special interest. Apply urgently for these leading positions and if possible, come and discuss opportunities with us at Leeds on Friday, 4th November, 1977. See the first advert page for details.
Consultant: Niall Bradley

Analyst & Senior Programmer IBM BAL/COBOL Durham To £4700

We seek a minimum 2 years' knowledge of IBM DOS, BAL or COBOL preferably DBOMP. Previous experience in a manufacturing environment would be advantageous. Relocation assistance will be supplied where appropriate.
Consultant: Selina Mills

Systems Programmers, Systems Designers, Systems Engineers London To £5300

A large banking group have numerous vacancies for staff experienced in DOS/VS, ASSEMBLER or COBOL and possibly CICS. A minimum 2 years' IBM 370 experience is essential. Equally, relevant staff with experience of financial system or banking would be of special interest. Excellent working conditions are available at a convenient City location.
Consultant: Selina Mills.

Hewlett Packard Systems Designers & Programmers North West To £7000

Candidates with experience of Distributed Processing on Production Control are urgently sought. A large manufacturing client will soon be developing an extensive manufacturing network system with substantial systems development to be undertaken. Experience of this equipment range will be essential for which attractive payment premiums will be negotiated.
Consultant: Niall Bradley.

Graduate Programmers Glasgow To £3800

Young candidates are sought with a minimum 2 years' programming experience in either ASSEMBLER, FORTRAN, ALGOL or PL/1. Programmers will work in a group bureau type environment as a centralised bureau service. Applications vary from commercial to Process Control. Sound medium term career opportunities.
Consultant: Selina Mills.

eMS Consultants Ltd
EMS Consultants Ltd.
61-63 Lower Street
Newcastle-under-Lyme
Staffs ST5 2RS
Telephone 0782 623665
(10 lines)
Register NOW!

eMS
EMS CONSULTANTS LTD
61 LOWER STREET
NEWCASTLE-UNDER LYME
STAFFORDSHIRE, ST5 2RS
Telex : 36836

Management Services & Computing Division
Telephone : 0782 623665/6/7/8
Employment Agency & Employment Business Licence No. M65

IC: Form Design EMS Copyright March 1977

For Office Use only

Company Ref. No.

SURNAME
Other Names
Address
Telephone
Home
Bus
Post Code
Ext.

Age	Date of Birth	Place of Birth	Nationality	Height	Weight
Married	Children	Car Owner	Driver	Nature of any Serious Illness	

Position Required — Required Salary Range
Present Position — Salary

WHERE DO YOU WISH TO WORK

Within U.K.	Yes/No	Acceptable Areas		Abroad	Yes/No
Will you move	Yes/No			Europe	Yes/No
				Middle East	Yes/No

NUMBER OF YEARS EXPERIENCE

Operating	Programming	Systems Design	Systems Analysis	Management	Total

Available for Interviews
Available for Employment

DETAILS OF SECONDARY AND FURTHER EDUCATION

Schools	Date	Examinations Passed
College/University	Date	Examinations Passed

Business Courses with Dates

1. Present Employer — Town
Position — Date Joined

TYPE OF INSTALLATION

Commercial		Bureau		Insurance		Scientific	
Manufacturing		Banking		Education		Engineering	

HARDWARE	OPERATING SYSTEM	LANGUAGES

Software or Packages

On-Line		Real Time		Time Sharing			
R.J.E.		Tele Processing		Data Base			

APPLICATION AREAS YOU HAVE BEEN INVOLVED IN (Please Tick)

Cost Accounting		General Ledger		Manpower Planning		Personnel	
Budgeting		Credit Control		Stock Control		Payroll	
Forecasting		Order Processing		Production Control		O.R.	
Corporate Planning		Marketing		Petrochemicals		Radar	
Sales Ledger		Distribution		Linear Programming		Statistics	
Purchase Ledger		Traffic Analysis		Simulation			

Projects Completed — Responsibilities

2. Previous Employer — Town
Position — Date Joined

TYPE OF INSTALLATION

Commercial		Bureau		Insurance		Scientific	
Manufacturing		Banking		Education		Engineering	

HARDWARE	OPERATING SYSTEM	LANGUAGES

Software or Packages

On-Line		Real Time		Time Sharing			
R.J.E.		Tele Processing		Data Base			

APPLICATION AREAS YOU HAVE BEEN INVOLVED IN

Cost Accounting		General Ledger		Manpower Planning		Personnel	
Budgeting		Credit Control		Stock Control		Payroll	
Forecasting		Order Processing		Production Control		O.R.	
Corporate Planning		Marketing		Petrochemicals		Radar	
Sales Ledger		Distribution		Linear Programming		Statistics	
Purchase Ledger		Traffic Analysis		Simulation			

Projects Completed — Responsibilities

Reason for Seeking Change

Details of type of position wanted

Additional Information -
Please explain below, in an 8-10 line precis, your current duties and applications experience

FOREIGN LANGUAGES

Spoken	Written	Read

Please show the number of years experience of the following. Where your experience is not specified please use the blank spaces.

HARDWARE		OPERATING SYSTEM		LANGUAGES		PACKAGES/SOFTWARE	
IBM 360/370		DOS		COBOL		FILETAB	
ICL 1900		OS		FORTRAN		DRIVER	
ICL 2960/2970		MVT/MFT		ASSEMBLER		CICS	
ICL 2903		GEORGE 1		PLAN		IMS	
UNIVAC 1100		GEORGE 2		PL1		8OMP	
UNIVAC other		GEORGE 3		RPG 2		D BOMP	
BURROUGH 700/800		MCP		USERCODE		PERT	
BURROUGHS other		Exec 8		AUTOCODE		V SAM	
HONEYWELL 66		GCOS		EASYCODER		IDS/TDS	
HONEYWELL 6000		OS 2000/200		ALGOL		MICROFILMING	
HONEYWELL other		VMEB/VMEK		NEAT		TELEPROCESSING	
NCR		J Level		CORAL		DMS	
ICL System 4				DL1			
PDP							

3 Past Employer — Town
Position — Date Joined

TYPE OF INSTALLATION

Commercial		Bureau		Insurance		Scientific	
Manufacturing		Banking		Education		Engineering	

HARDWARE	OPERATING SYSTEM	LANGUAGES

Software or Packages

On-Line		Real Time		Time Sharing			
R.J.E.		Tele Processing		Data Base			

APPLICATION AREAS YOU HAVE BEEN INVOLVED IN

Cost Accounting		General Ledger		Manpower Planning		Personnel	
Budgeting		Credit Control		Stock Control		Payroll	
Forecasting		Order Processing		Production Control		O.R.	
Corporate Planning		Marketing		Petrochemicals		Radar	
Sales Ledger		Distribution		Linear Programming		Statistics	
Purchase Ledger		Traffic Analysis		Simulation			

Projects Completed — Responsibilities

PLEASE CHECK THAT EACH SECTION HAS BEEN TICKED APPROPRIATELY

ADDITIONAL INFORMATION

General

Data Processing

Terminals

Software/Packages

Application Areas

Projects and Responsibilities

IAL

Real-Time Programming...
with a difference

Mini-based real-time projects

West London

Programming +analysis/ design

Overseas travel opportunities

Generous benefits

Sports/social facilities

Programming Project Leader Analyst/Programmers

The use of computer-aided despatch is expanding fast in areas of activity where control of vehicles and resources is vital to efficient operation. IAL, with a 30 year history of involvement with communications world-wide, are supplying such systems in a variety of applications including police, other emergency services and public transport operations. Current activities cover UK and North America and further growth is planned in these and other areas.

In line with this growth, the Computer Systems Division now has vacancies for men and women at various levels within the programming team, to work on new projects based on single and multiple Nova/Eclipse systems. Applicants should have at least 1-2 years' experience of mini-computer FORTRAN/Assembler real-time programming. Any Systems or engineering experience would be advantageous as would experience with Data General equipment. Graduate preferred.

Good salaries and associated benefits are offered. The positions are based in West London (close to the M4 and Airport). Overseas travel for short periods is likely for which generous additional allowances are paid.

Opportunities are great, both in the field noted and also in other computer-orientated fields with which the Company is concerned, notably the use of minis/micros in data network control/management. The positions require a greater than normal degree of involvement and interest in all aspects of project implementation. They represent an opportunity to be fully involved in an exciting line of development with an enormous potential.

Please write or phone as soon as possible quoting Ref. 420 to Jack Smith, International Aeradio Limited, Aeradio House, Hayes Road, Southall, Middlesex. Tel: 01-573 6378/1908.

SENIOR COBOL PROGRAMMER

LONDON W1 £5,000+

Looking for an opportunity to work on major systems (real-time and batch) in a database environment? The appointment offers:

- *initial responsibilities on ICL 1900 applications*
- *subsequent retraining on ICL 2900 hardware/software — a large New Range configuration is due for delivery*

This career opening is with a well-organised West End installation, with a substantial schedule of development work, on whose behalf we have been retained to recruit. It will interest ambitious programmers with upwards of two years' experience, including ICL COBOL and an advanced operating system.

For an initial confidential discussion, please ring in, quoting ref 829, or leave a message on our answering machine, after hours.

Tel: 01-637 5796

EDP Systems
52-53 Margaret Street
London W1N 7FF

JBA

Data Base Consultants–

London Based

One of the U.K.'s most respected software houses, well known for its data base work, wishes to recruit additional data base specialists.

They will be required to work upon a variety of client projects ranging from advising on the feasibility and implications of the data base approach to the detailed design and implementation of specific applications.

Senior Consultant– **Oil Industry £7–10K**

In addition to the qualities required by the consultant, the successful applicant must have a good general understanding of the industry and have had a secure role in the planning and implementation of major data base systems.

Consultant **£6–8K**

Wide computer and applications background with experience of the special analysis and design methods appropriate to the data base approach. Detailed software knowledge is not required but candidates must have worked with at least one of the proprietary data base management systems.

Applicants must have the necessary personal qualities to successfully undertake projects for clients without detailed supervision.

Contact: Margaret Stevens

Programmers

Berks **to £5,000**

Our client needs ambitious programmers. Applicants with experience of CORAL (or Algol), ideally gained on mini's preferably Interdata, in a real-time environment are preferred although training will be given where applicable.

Positions offer excellent career opportunities and variety of work.

Contact: Margaret Stevens

Australia

Approaching summer, very high standard of living, good salaries, and varied unparalleled opportunities must make Australia an attractive prospect at this time. If you are seriously considering a move, contact us for our free counsel and help in locating a good career situation.

Currently in urgent demand: Honeywell 6000 or Level 66 personnel; CICS expert; IBM COBOL Programmers.

Contact: Mike Creamer

Software Specialists

Home Counties **up to £6,000**

Our client, a leading European software house, has vacancies for specialists to develop a number of different software facilities.

Applicants must have several years' experience of operating systems, compilers, emulators on mainframes such as 360/370, and 1900's or mini-computers of the PDP11 or NOVA range. These are excellent opportunities to work on sophisticated systems in a professional and challenging environment.

Salaries negotiable according to experience.

Contact: Jim Baker

Technical Authors

Hertfordshire **up to £6,000**

A highly progressive company, engaged in the development of software and hardware products, urgently seek personnel to create modularised documentation for a varied audience. Positions are open to established Authors or Programmers with a desire or interest in this fascinating type of work.

Excellent relocation package, salaries, and working environment.

Contact: Mike Creamer

For further information on any of the above vacancies please contact the appropriate consultant. If your qualifications do not match the above positions but you are seeking other opportunities please contact us anyway.

JAMES BAKER ASSOCIATES
International Personnel Consultants
16 Maddox Street, London W.1. Tel: 01-491 4478

Systems Analyst

(Male or Female)

Salary range: £5170 to £5536 including pay supplements

required in the Computer Section at Nugent House for work involved with the development of a wide range of technical applications within the Authority, including large data archives and specific problem solving in all non financial areas of the Authority's business.

The successful applicant will have two or more years' experience as a Systems Analyst and a knowledge of FORTRAN or ALGOL would be of advantage.

Excellent conditions of service apply including a flexitime scheme based on a 35 hour 5 day week plus generous sick leave and holiday entitlements. There is also a Staff Restaurant and a Social Club.

Applications should be made on forms available from the Divisional Manager at Nugent House, Vastern Road, Reading RG1 8DB. Telephone Reading 593331. Please quote reference E.11.

Closing date 3 November, 1977

Thames Water
Thames Conservancy Division

Systems Project Leader

With potential for promotion to Project Co-ordinator.

To join a big company with major projects and, therefore, the prospect of varied and interesting work which will broaden your skills and experience in a short time.

IBM/DOS essential; COBOL desirable; with experience in a manufacturing operation.

Age 25-30. Starting salary c £5250. Free lunches. Excellent re-location assistance. Very pleasant South-West coast town.

Please write or phone (01-930 4725) in strict confidence, quoting ref. 1001/CW to:-

Philip Smith
Manpower Consultants
85-87 Jermyn Street, London SW1Y 6JD

PORTSMOUTH POLYTECHNIC
Faculty of Engineering

Computer Programmer

Post No 639

Applications are invited from persons with experience of Algol and Fortran to work on a variety of Civil Engineering, construction management and data processing problems.

The Polytechnic ICL 4130 is currently being replaced by an ICL 2960 which will have terminals to the Department of Civil Engineering.

The Department also uses programmable desk calculators and the Engineering Faculty graphics system which is based on a P.D.P 11 Computer and a flat bed plotter.

Salary Scale: T3/4, £2,922-£3,702 plus £473.7-£512.7 supplement.

Applications for the above posts available from Staff Office, Alexandra House, Museum Road, Portsmouth. Telephone Portsmouth 27681. Ext. 317. Closing date as soon as possible.

International Real-Time Systems
Switzerland

Hasler AG, a leader in the real-time telecommunications field, has vacancies for Analyst/Programmers to work at its Head Office in Berne, Switzerland.

The work, which includes design, development and implementation of advanced computer control telex systems, is demanding but provides excellent job satisfaction and experience, together with the opportunity to live and work in Switzerland, so a knowledge of German would be useful.

Good remuneration, including cost of living allowance, removal allowance, etc.

If you believe you can make a contribution in the communications and real-time fields, have a degree or equivalent qualification, and at least two years' experience in assembler languages, then write for an application form to:

Miss R. Annisan (ref. CW)
Hasler (Great Britain) Limited,
Commerce Way, Croydon, CR0 4XA.
Telephone: 01-686 0901

Hasler *time and systems*

KPG give you a better deal

I used to be a contract programmer so I know what a fair deal is, so if you're not getting one, please ring Derek on 01-995 3573

CAPITAL APPTS. — 34, Percy St. — London, W.1.

FORTRAN
Experienced and Graduate Trainee Programmers
urgently required for industrial and scientific development
£3000-£5800
ALL AREAS
Phone for free list of agencies
637 5551 day, 455 0468 eve.

PROGRAMMERS
SOUTH COAST
COBOL OR ASSEMBLER
c £4200
Phone 01-439 6481
(24 hours)
EFFECTIA GRAVIS
Personnel Consultants

Computer Consultancy

Hill Price Davison is a successful computer consultancy formed in 1972.

The completion of some of our recent projects has established us as market leaders in mini and mainframe computer technology.

To maintain our successful growth pattern we now require the following staff:

Senior Systems Analysts
Systems Analysts
Programmers

Call Alan Isaacs on 01-381 3266
Hill Price Davison Ltd.
Walham House
Walham Grove
London SW6

GALLAHER (DUBLIN) LIMITED

have vacancies for

DATA PROCESSING PERSONNEL

Gallaher (Dublin) Limited, situated at Tallaght in a south-western suburb of Dublin is part of a major international company, engaged in the manufacturing and marketing of tobacco products including such well known brands as BENSON & HEDGES, SILK CUT, MELLOW VIRGINIA, HAMLET, etc. We have recently upgraded our Data Processing facilities to a HONEYWELL 62/50 mainframe with 192K memory, 87 MB Disk Storage and 400 LPM Printer using GCOS and TRANSACTION PROCESSING through VDU's. We now wish to expand our D.P. Staff and require the following personnel.

SYSTEMS ANALYST

Ideally, candidates should have a professional qualification or a degree equivalent preferably related to Computer Science, Mathematics or related areas. Significant D.P. experience may be acceptable. Applicants should have good analysis experience coupled with a COBOL programming background. They must be able to demonstrate that they have played a senior role in the design and implementation of at least one major system.

Reporting to the Data Processing Manager, the Analyst will assume responsibility for all phases of new systems and the further development of existing systems.

CONSOLE OPERATOR

The Console Operator will have the responsibility for the operation of the Honeywell 62/50 mainframe, reporting to the Operations Supervisor.

Essential qualifications are an aptitude for figures and the ability to work on own initiative so as to meet scheduled deadlines for completed work. The successful candidate will have a Leaving Certificate, or equivalent, including high grades in English and Mathematics and at least two honours. Training will be provided.

Salary and fringe benefits are attractive. Applicants should, in the first instance, send a detailed curriculum vitae to:-

The Personnel Manager,
Gallaher (Dublin) Limited,
Virginia House,
Greenhills Road,
Tallaght,
CO. DUBLIN.

to arrive not later than Friday, 11th November, 1977.

Systems Analysts
London

Have you experience in commercial computer systems design, or are you a Senior Programmer with ambitions to become a Systems Analyst? If so we can offer you the opportunity to join our group of young professionals in a rapidly expanding computer department at Courage, one of the big six in the beer, wine and spirits business.

We have just moved to our new data processing centre designed to cope with our current and future expansion. We have at present two ICL 1903T's, using MAXIMOP and George II+ and are now considering our future hardware requirements. Our development plans include the implementation of on-line order processing, management information and several accounting systems.

If you are interested in advancing your career with us, please write with brief details of career to date, or telephone for an application form, to Roy Spence, Courage DP Department, Mansfield House, 335 Western Avenue, Acton W3, Telephone 01-992 5691.

Courage

Programming Manager

Salary: C.£7,250 p.a. + Mortgage subsidy, excellent fringe benefits.

Location: South Coast of England.

This is a completely new position and requires someone with considerable experience in the programming area. Our client, the Card Division of American Express, is a large IBM user and has a programming group of about 20 programmers. They wish to meet someone to take charge of this group. The successful candidate will have a comprehensive programming background, as the range of applications vary from a large IBM mainframe to mini-computers. The person selected will be capable of maintaining Technical Interface with System Development and Computer Operations.
We imagine the successful candidate is probably now working as a Project Manager or Chief Programmer with a Software House, a Computer Service Bureau or a large user, and is looking for an opportunity, which this position certainly offers, to develop his or her career in a progressive environment. The planned expansion within our client's installation during the next two years is significant. Because of this the challenge will be formidable. Accordingly a minimum of 5 years' programming experience is required. A "self-starter" who believes he or she has the necessary drive, both in management and technical skills will welcome the opportunity offered.

Please contact John Goldsmith, quoting Ref. 885 CW/.

Computing Services Association

WE ARE ALWAYS INTERESTED IN HELPING YOU WITH YOUR CAREER
John Goldsmith (Computer Recruitment) Ltd., 15, Buckingham Palace Road, London, S.W.1.
Tel: 01-828 5356–24 hour answerphone service.

JOHN GOLDSMITH (Computer Recruitment) Ltd.

SYSTEMS ANALYSTS

BEDFORD

UP TO £5000 + BONUS SCHEME

The George Fischer (Great Britain) Ltd. Group of Companies is part of a large International Swiss Group and the four companies in the UK are engaged in a wide range of manufacturing and distribution activities.

The Group Computer Centre in Bedford is near local amenities, attractive and inexpensive housing and less than one hour from London. The present machine is being replaced with an IBM 370/138 early in 1978. The major project currently under development is the installation of an Order Processing/Stock Control system involving country-wide extension of our TP Network.

You would be working on this project now and other substantial commercial and manufacturing systems are due to be started in 1978.

Assistance will be given with relocation expenses where necessary. Please telephone or write for an application form to:

The Personnel Manager
GEORGE FISCHER (GREAT BRITAIN) LTD.
Britannia Works, Kempston Road
Bedford MK42 9DH
Tel. Bedford (0234) 55291

TIMESHARING in AMERSHAM

with a newly formed bureau company backed by a major international group

BUNZL DATA SYSTEMS was formed in July of this year as an independent subsidiary of the large Bunzl international group. It runs a timesharing division based on PDP 11/70 and 4 x PDP 11/35 machines selling commercial applications facilities covering financial, order processing and production planning applications. Originating as an inhouse-only department 3 years ago, the company is now embarking on an ambitious and aggressive programme to market its services to outside users. Already growth plans are becoming reality and consequently additional staff are required.

SOFTWARE MANAGER

c £8000 p.a.+Car+Benefits

Reporting to the Divisional Director, this person will be responsible for all the applications software development by the company. This will involve managing a team of circa 12 Programmers and Analysts, split between Amersham and the City. Naturally, the incumbent will play an important part in decision making on the company's hardware and software development policies.

As potential director material, you should be aged 30-35, a sound technician (preferably DEC based) and able to manage a young and highly skilled team on a profit conscious basis. Acting in a sales/customer support role, your team will develop tailor made software as well as install and modify packages. This post is seen as a key appointment, vitally important in the company's development.

RW 43/1

PROGRAMMERS and ANALYST/PROGRAMMERS

£4500 p.a. to £6500 p.a.

BASIC+ on real time PDP applications
Bunzl has so much to offer at this moment in time:—

- ★ Career development through rapid expansion
- ★ Highly marketable experience on PDP and real time applications
- ★ Excellent training
- ★ Hands on machine time
- ★ Customer Contact
- ★ Attractive working conditions and location
- ★ Financial stability through parent company

Whether you are currently commercially or scientifically based, all you need is a minimum of 1 year for Programmer and 4 years for Analyst/Programmer of good experience including high level languages. Naturally, DEC experience is advantageous. You will work in attractive rural offices and enjoy 20 working days holiday, subsidised canteen, L.V.'s, BUPA and social club.

RW 43/2

SOFTWARE DEVELOPMENT IN ARIZONA USA

$ Excellent package
Initially 12-month contract
Subsequent permanent employment possible

Our clients are a highly respected, medium sized US computer consultancy. They wish to recruit experienced software professionals to undertake projects for one of the world's major corporations.

If you have expertise in
Operating Systems
Database Software
Compilers
Language Development
Software Facilities
Etc.

then we wish to hear from you. Initial employment is on a 12-month contract, however, there is every possibility of continuation on a permanent basis. The site is an extremely attractive location in a relatively inexpensive area of the US, much sought-after by DP professionals.

CONTACT US NOW AS OUR CLIENTS WILL BE IN THE UK IN THE VERY NEAR FUTURE.

RW 43/3

SYSTEMS ANALYSTS LONDON

to £7500 p.a.+Mortgage + Bonus + Attractive benefits

Major US Bank developing IBM and PDP based systems.
Two really top quality Analysts are required by this leading Bank.

They will:

(i) Investigate a business area and determine a business systems definition
(ii) Undertake the detailed design of the system
(iii) Be involved in the development and implementation

Projects are aimed at timescales of 6 months to one year and the Analyst, actively participating in all phases of the development cycle, has considerable responsibility for successful implementation.

As a young, thorough professional (age circa 26), you will be demanding in your approach to work and career development. During the next five years you will have every opportunity to meet these demands. The London branch's computer department is undertaking a complete re-write of its banking systems and developing an International Overseas Network based on PDP kit.

The only really essential requirements are intelligence and sheer professionalism; if you have PDP or banking experience all the better.

RW 43/4

Ring DAVID J. HUTCHINSON and arrange an interview now

hutchinson-scoggins recruitment
10 Dover Street, London W1X 3PH
Telephone 01-499 4501

Anglian Water Authority

JUNIOR PROGRAMMERS

RP 27A (H6A033/34/35/36/61/62)
Up to £3,200

A minimum of 12 months' COBOL programming experience.

TRAINEE PROGRAMMERS

Up to £3,200

An honours degree in a computer related subject.

Applicants will initially be required to assist in the development of the Authority's Customer Service System for a consumer base of approximately 2.1 million properties. Subsequent development will include a fully integrated terminal based financial system.

All posts are located at Regional Headquarters in Huntingdon. Relocation expenses are payable in appropriate cases.

Application forms (returnable by 10th November, 1977) are obtainable from the address below or by telephoning Huntingdon (0480) 56181 Ext. 252.

Personnel Department
ANGLIAN WATER AUTHORITY
Diploma House, Grammar School Walk
Huntingdon, Cambs. PE18 6NZ

WESSEX REGIONAL HEALTH AUTHORITY

COMPUTER OPERATOR/ SUPERVISOR

Salary £3,133 rising to £3,976 (Scale 1) inclusive of Stage I and II supplements.

The appointee will be based at Northern Road Clinic, Cosham, and will be responsible for operating a Regionally Controlled ICL 2903 20K computer providing a service to the local Health District.

Ideally previous practical computer experience would be preferred.

Application forms and further details from the Personnel Department, Highcroft, Romsey Road, Winchester, Hants. Telephone Winchester 63511 ext 380

Closing Date: 4th November, 1977

CONTRACTS IN PARIS

WITH THE MLA CONTRACT SERVICE

We are looking for Contract Programmers Programmer Analysts to join a project team workin France. You will be located at the offices of our Fre Associate Company in central Paris and will be invol in the development of a large accounting system bureau client.

We are looking for a minimum of two years' CO programming experience preferably with IBM UNIVAC hardware. Candidates will be expected demonstrate that they have a good basic knowledg French.

Contracts are from three to six months duration an are looking for people who can be available immediately or during the next four weeks. expenses will be paid including airfare. Initial interv will be held in London.

Please telephone David Garnsey at:

metra group

Metra Lowndes-Ajax Ltd.
Wrencote House
119-121 High Street
Croydon, CR0 1QJ
Telephone: 01-680 2400
Telex: 887575

PROGRAMMERS

WEST COUNTRY
1900 COBOL
c £4000

Phone 01-439 6481
(24 hours)
EFFECTIA GRAVIS
Personnel Consultants

PROGRAMMERS

SOUTH COAST
COBOL OR ASSEMBLER
c £4200

Phone 01-439 6481
(24 hours)
EFFECTIA GRAVIS
Personnel Consultants

SHIFT MGRS

HERTS **to £6000**

WEAVE got an Operations job TAILOR-made for you — SEW it would SEAM if you're management MATERIAL — you'll NEEDLE the GIft exp. you can COTTON on to.

ANALYSTS

CITY **to £5647**

OMLETing you know that with DOS/V — CICS/VS under POWER exp. we SHELL introduce you to an EGGSellent job — no YOKE we're aFRIED you'll BOIL in the SCRAMBLE to POACH this.

(Ref. 3971)

SNR PROG

S.E. ESSEX **c£5000**

WHALE KIPPER WHELKome for you at our PLAICE if you are SALMON with 2 yrs. COBOL/PLAN eFISHent with G2 + drive.

(Ref. 3766)

OPS. LECTURER

to £4600

[illegible] operating, GEO [illegible] good job for 2 yrs. [illegible] EYEBROW but with [illegible] future, and the [illegible] go aHEAD [illegible] today's job gone

(Ref. 3862)

SHIFT LDR

CITY **to £4750**

This lousy job is situated in the worst possible place! Absolutely no prospects — and, to work on this remnant of an IBM 370 you'd need at least £10K. However they're only paying half that!

(Ref. 3971)

SOFTWARE HOUSES

We specialise in placing the best progs and analysts in the best Software Houses — We currently have registered **ALL** the best positions permanent and contract!

0206-61261

Stone Executive
64-65 North Hill, Colchester, Essex

ata Computer Recruitment

A division of ATA Selection and Management Services, recruitment consultants to Industry and Commerce since 1962.

WHY COMMUTE TO LONDON?

WE HAVE OPPORTUNITIES IN SUSSEX FOR YOUNG GRADUATES

OUR CLIENT, A MAJOR ENGINEERING FACTOR, CAN OFFER YOU **JOB SATISFACTION** AND REAL **CAREER ADVANCEMENT** IN A VARIETY OF COMPUTER-BASED VACANCIES

ANALYST/PROGRAMMERS

c £5,500 p.a.

You should have a minimum of 2 years' good experience of programming in COBOL or FORTRAN and 1 year of systems analysis. Experience on PDP 11 with RSX/11M preferred. You will be working with either a line management information system or an engineering data base.

SYSTEM ENGINEER/PROGRAMMER

c£5,000 p.a.

You will be involved in an expansion programme concerning further applications of the DEC mini/micro computer range. You will be designing and writing programmes in ASSEMBLER and High Level languages such as CORAL 66 and have experience in RSX/11 operating systems.

USER SUPPORT CO-ORDINATORS

c £3,350 p.a.

Initially you will be helping to install advanced methods of Production and Inventory Control and have a career path leading into industrial management.

GRADUATE ENGINEER

£3,300 to £4,500 p.a.

You will join a team developing Computer Aided Design and Interactive graphics applications. A powerful Prime 400 mini computer supports twenty work stations for use by engineers and draughtsmen. Perhaps you have been doing research in engineering and want to move into an advanced computing environment.

For further details telephone our Crawley office 0293 514071 or your nearest ATA branch.

Written applications enclosing detailed curriculum vitae to: ATA Computer Recruitment, 36 The Broadway, Crawley, Sussex

LONDON **(01) 637 0781** 230 Gt. Portland St., W1N 5HG
MANCHESTER **(061) 832 5857** 86 Cross St., M2 1LA
BIRMINGHAM **(021) 643 1994** Woolworth Building, 102 New St., B2 4HQ
BRISTOL **(0272) 211035** Equity and Law Building, 36-38 Baldwin St., BS1 1NR
EDINBURGH **(031) 226 5381** Anglo House, 24/26 Frederick St., EH2 2JR
CRAWLEY **(0293) 514071** 36 The Broadway.

A COMPANY CAR plus SALARY TO £6,000

EUROLOGIC SOFTWARE [illegible] has a requirement for several

PROGRAMMERS AND ANALYST PROGRAMMERS

We want to meet people with a minimum of two years' exper small computer systems in the following areas:

- ★ **RPGII on IBM system 3/32 or other small business comp**
- ★ **DIBOL or MACRO on PDP11**

You will be working on a range of customer applications throughout UK and abroad. We are able to offer excellent career prospects with a high degree of job interest.

Call Richard Barker on 01-549 8933 to exchange information, or him at the address below. Meetings can be arranged in Kingston Central London outside normal office hours if required.

Eurologic Software Ltd

12 Canbury Passage, Richmond Road
Kingston upon Thames, Surrey

EUROLOGIC
A Member of the Wellard Group

Swiss-based South American Travel Opportunities Real-time Software for Process Control

Software Specialists to £15,000

We have been retained by our client, a rapidly growing and outstanding professional organisation, involved with the control and supervision of Electrical Distribution Networks, to recruit software specialists.

Based in Switzerland, successful candidates will be required to take full responsibility for all stages of development, from analysis through to implementation. Broadly speaking, we are looking for candidates in two main categories, one concentrating on establishing new standard software packages and requiring a background in computer science, modern real-time software, Databases and technology.

The second category calls for direct experience of project implementation and will include travel to South America, Middle East and other parts of the world for commissioning purposes.

General background experience should include a degree, direct experience of process control, a knowledge of ASSEMBLER and other high level languages, preferably CORAL and FORTRAN. Familiarity with PDP, RSX11 operating systems will be advantageous. Successful candidates will be encouraged to take project responsibility and management opportunities will exist for those with relative potential.

Remuneration will be high for the right applicants and will be totally consistent with local standards.

Interviews will be held in London on the week beginning November 21st.

Please contact John De La Mere
for further information

Kingston: 44 Wood Street, Kingston upon Thames, Surrey. Telephone 01-549 3212 (24hrs) Telex 27950
Dublin: Canberra House, 24 Lower Leeson Street, Dublin 2. Telephone 762170 762188 785692 Telex 30742
Amsterdam: Riviervisterlei, Amsteldijk 166, Amsterdam 1010. Telephone 461844 Telex 11336

Computing Services Association

Software Engineers

Switching New Products Division

01-368 4429 for recorded message of latest opportunities in U.K. and Europe, or write for information to:
T. C. Kerr, STC, New Southgate, London N11 1HB.

Standard Telephones and Cables Limited
A British Company of ITT

TECHNICAL PROGRAMMER
EDINBURGH
(Salary range £2,900 - £5,200)

A Technical Programmer is required to join a small team within the Operational Research Department based at Regional Headquarters in Edinburgh.

The Team is responsible for the development and maintenance of Software for a PDP 11/45 and an IBM 1800 Computer, both used for Telemetry applications in the grid control section at Regional Headquarters. As well as supporting the real-time programming needs of the grid control section, the computers provide a batch processing service for technical applications. Future developments include the addition of a microprocessor — based Telemetry system to supplement the existing system.

The Programmer will be involved with engineers in all aspects of project development, testing and maintenance.

Applications will be welcomed from Technical Programmers with several years experience including Fortran

Consideration will also be given to graduates recently qualified in Computer Science, who would be required to undergo a training programme.

The salary paid will be commensurate with experience and qualifications within the above range.

Applications (from males and females), giving full details of experience and qualifications, should be addressed to.

The Appointments Officer
Scottish Gas
340 West Granton Road
Edinburgh EH5 1YB

Closing date 7th November 1977

SCOTTISH GAS

Customer Service Engineers
Minicomputers
Southern Counties up to £5,800 + car

Continued expansion of our product range has created a number of openings in our Minicomputer Service Department. We would like to hear from Engineers with experience in the use and maintenance of minicomputers and peripherals and ideally with experience of D.E.C. PDP11 and PDP8.
The appointments are based in Surrey at our Tolworth Service Centre.
Candidates, male or female, should preferably be HNC standard, must be capable of working without supervision and able to communicate at all levels.
Salary will be up to £5,800 depending on experience and a company car will be provided. Excellent conditions of employment including BUPA membership plus assistance with relocation expenses where appropriate.
Please telephone or write for an application form to Mrs J. S. Edrich, Personnel Officer, Plessey Memories, Water Lane, Towcester, Northants. Tel: Towcester (0327) 51515.

PLESSEY

HONG KONG POLYTECHNIC

Lecturers/ Senior Lecturers
Computing Science

Applications are invited for the above posts from candidates with a degree or professional qualification and/or extensive experience in one or more of the following areas Systems Analysis and Design, Commercial Programming and Data Processing, MIS, Computer Graphics Computer Education in Secondary Schools, Computer Assisted Instruction, Systems Programming and the application of computers to all disciplines taught at the Polytechnic, e g Engineering, Mathematics, Textiles, Design and Commercial subjects

The appointee will be required to teach on courses of their specialism as well as general courses offered by the Department The development of short courses to computer professionals is important and experience in this area would be an advantage as would experience in developing educational curricula

SALARIES
Lecturer HK $40,920-$73,980 by 11 increments
Senior Lecturer HK $74,480-$100,380 by 6 increments
Sterling equiv - HK $8.30=£1 is £4,930-£8,913 and £8,971-£12,094 respectively

Appointments on 2 year gratuity bearing contract initially Thereafter suitable appointees may be offered further contracts or superannuable terms at the discretion of the Polytechnic

Free passages long leave subsidised accommodation medical and dental treatment, education allowances and a terminal gratuity equal to 25% of basic salary received over entire contract period

Application form and further details from the Recruitment Unit TETOC (Technical Education and Training Organisation for Overseas Countries) 35-37, Grosvenor Gardens London, SW1W 0BS Ref HKP-CW

Closing date for receipt of applications 14 November 1977

Tetoc

MIDLANDS

SYSTEMS MANAGER degree or professional qualifications in engineering required At least 4 years working on engineering/production systems. Familiar working with terminals. Area W. Midlands. Salary to 6K. Ref. M.12.

SENIOR SYSTEMS ANALYST responsible to Group D.P M. at least 2 years production planning and control systems + a formal programming background in COBOL and RPG experience of small mainframes or ICL 2903 and terminals required. Area Worcestershire. Salary to £5.7k. Ref. SA98.

SYSTEMS ADVISOR required by mini/terminal manufacturer. At least 3 years on mini or mainframe systems. Area Birmingham. Salary to £5.5k. Ref. P180.

SENIOR SYSTEMS ANALYST at least 4 years in commercial systems including accounting and on-line applications. Area Coventry. Salary c. £5k. Ref. SA024.

CONSULTANT/PROGRAMMER/ANALYST, for time sharing bureau. Applicants should have a degree plus a working knowledge A.P.L. Area Midlands or London. Salary to £6½k and car. Ref. S009.

SENIOR PROGRAMMER at least 3 years + experience in IBM COBOL and ASSEMBLER. Area Northampton. Salary c. £4.5k.

PROGRAMMERS 1 year + ICL COBOL. Area Northampton. Salary c. £3000 + low interest mortgate rates.

COMPUTER OPERATOR. ICL 1900 GII 1 year + experience. Double day shift. Area Birmingham. Salary £3k. Ref. 62. An IBM 370 OS 18 months + experience. Area Birmingham. Ref. OP26.

We have further 200 plus DP positions throughout the West Midlands, East Midlands, Gloucester, Wiltshire, and Somerset. Telephone NOW for an application form or further details.

021-643 2111

Contact: Graham Aston M.E.C.I.
Martina Computer Services, Freepost, Western House, Smallbrook, Queensway, Birmingham B5 4RR
Telephone: 021-643 2111—24-hr. Answering Service

Datasolve

SOS to all computer operators in the Midlands.

Friday 4th November could change your future. We are sending you a qualified member of staff to explain all the aspects of contracting with Knights. Interested?

Call Us Now!
01-491 4706 June Mogg, Sue Smyth, Jane Asbury
or 021-772 8331 Ray Parsons, Barry Hadfield

Why not come along? Nothing to lose. Plenty to gain! No commitments.

Knight Staff Services Division of ROC Datasolve Group and a member of Computing Services Association.

Share in the future of Britain's Gas BRITISH GAS

SENIOR COMPUTER OPERATOR
CROYDON

Commencing salary, including shift allowance, within the range £4,021 to £4,859 per annum.

SEGAS have a vacancy for a Senior Computer Operator with 2 to 4 years' experience of IBM 360/370 hardware running under OS and/or VS operating systems.

Our present installation comprises a 1.0mb 370/145 and a 0.5mb Honeywell H4200 operating on a 3 x 8 hour shift/5 days week basis. A 2mb 370/148 is due for installation in November of this year. We undertake a wide variety of both batch and on-line applications and currently have about 150 remote VDU's installed throughout the Region. IBM software in use includes OS/VS1, VM/370, CMS, VTAM/NCP, CICS and ATMS.

The salary quoted includes London Weighting (where appropriate) plus 1976 and 1977 salary supplements.

- Good working conditions.
- Generous holidays.
- Sick pay, pension and insurance schemes.
- Sports and social facilities.

Write giving full details, within 7 days, and quoting Ref. F3767 to:

Personnel Manager, Segas, Segas House, Katharine Street, Croydon CR9 1JU.

Under normal circumstances applicants will be informed of the outcome of their application within two weeks.

SEGAS

GRAMPIAN REGIONAL COUNCIL DEPARTMENT OF FINANCE
COBOL PROGRAMMER
REF 527/7

Present ICL 1902 T to be replaced during 1978 by an ICL 2960 with ½ MB store, 6Mt. 4 x EDS 200 and 2 x LP1500

Salary scale A P Grades I/II - £3,096 to £3,825 per annum, with possible progression to £4,395 plus Phase 1 and Phase 2 supplements, with placing according to qualifications and experience

Assistance may be given with removal and legal expenses in appropriate cases

Application forms may be obtained from the Personnel Officer, Woodhill House Ashgrove Road West, Aberdeen AB9 2LU Closing date for applications 31st October, 1977.

EMPLOYMENT OPPORTUNITY IN AUSTRALIA WITH LASB COMPUTER SERVICES
LOCATION: MELBOURNE, VICTORIA

Our clients, the Motor Accidents Board have placed an order for an ICL 2960 computer to replace their existing ICL 2504 computer.

Systems already running on the M.A.B.'s ICL 2904 computer include a large on-line enquiry/update system and several direct access updating and reporting systems. Future developments will include upgrading existing systems to utilize data base techniques (IDMS) and on-line data entry.

SYSTEMS ANALYSTS/PROGRAMMERS
$12500 - $15500

We require persons with suitable academic qualifications and at least three years' experience with a good knowledge of Cobol and experience on ICL 2900 computers with VME/B or IDMS.

SALARY AND CONDITIONS:
Salary will be negotiated within the ranges specified and superannuation will apply immediately. Four weeks' annual leave with holiday loading and generous sick leave provisions apply
Assistance will be given with removal expenses
APPLICATIONS — in writing giving details of work history and qualifications and a day and evening telephone number, should be marked confidential and addressed to —L.A.S.B., Migration Section, Office of the Agent-General for Victoria, Victoria House, Melbourne Place, Strand, London WC2B 4LG

H.P.S.L. ..... H.P.S.L.

FREELANCE PROGRAMMERS

IBM COBOL, OS/VS with CICS experience and IBM PL/1 OS VS.
Required for 6 months plus contracts on the south coast

Programmers & Analysts
London-£3,500 to £6,000 p.a.

What's it worth . . .

To work for the admitted world leader in its product range holding four Queen's Awards to industry and £100 million group turnover.
To contribute to the production of very complex precision engineered products each of bespoke design.
To enhance an already established IBM370 installation in database, teleprocessing and distributed intelligence facilities.
To know that success is rewarded with career progression carrying right through the data processing function; also opportunities into general management.
To have evidence that the programme of development tasks extends well into the future with a total company commitment to computer working.
To be a member of a team of computer professionals working on a wide variety of projects across production, engineering and commercial type systems.

... at least a telephone call or brief written particulars of your education and experience, to me: H. N. Wilkinson, Management Services Manager, Molins Limited, 2 Evelyn Street, London SE8 5DH. Telephone: 01-237 4581

MOLINS
International Precision Engineers

FORTRAN Analyst/ Programmer
LONDON W1 c £6,000

This appointment offers.
- responsibility for two large FORTRAN systems of a novel, complex and interesting nature, including detailed specifications, programming, testing and documentation
- liaison with user departments, computer operations and analysts on linked projects
- analysis work on systems for ICL 1900/2900, both real-time and batch, with some database applications (IDMS).

Candidates should have
- extensive FORTRAN knowledge, ideally on both ICL and IBM equipment
- statistical experience and formal training
- willingness to work on non-statistical applications

We have been retained to recruit for this post on behalf of clients, a major West End installation. Please ring us for a confidential initial discussion, or leave a message on our answering machine after hours, quoting ref. no. 779.

Tel: 01-637 5796
EDP Systems
52-53 Margaret Street London W1N 7FF

COMPUVAC

POSITION	LOCATION	MACHINE	SYST.	SHIFT	SALARY
Operator	W. End	ICL 1900	GII	2	£3,500
Operator	W. London	ICL 1900	GII	3	£4,000
Operator	Middx.	ICL 1900	GII	3	£4,000
(Plus progression into Programming or Technical Support).					
Ops. Supvsr.	City	IBM Syst. 3		DAYS	£4,500
Shift Leader	W. End	IBM 370	DOS/VS	3	£4,500
Senior Op.	City	IBM 370	OS/VS	3	£4,000
Operator	Middx.	IBM 370	DOS/VS	3	£3,800
Operator	City	IBM 370	DOS/VS	3	£3,200
Chief Op.	Kent	IBM 370	DOS/VS	DAYS	£4,000
Data Control	W. End	IBM 370	OS/VS	DAYS	£3,000+
Data Control	City	IBM 370	DOS	2	£3,400
Production Control	City	IBM 370	OS JCL	DAYS	£3,500
Customer Liaison	City	Any	Any	DAYS	£4,000

For full details on these and many others call

248 6367
LORTON HOUSE
5 LUDGATE CIRCUS BUILDINGS
LONDON, EC4

SYSTEMS ANALYST
c. £6,500 + car

The rapid expansion of the fork truck hire business of Lex Service Group gives rise to the need to appoint a systems analyst to develop data processing and management information systems in the Group.
Lex, through its subsidiary Harvey Plant Ltd. operate 5,000 fork lift trucks from 35 depots throughout the UK. They require an experienced data processing professional to design and implement a management information system that would incorporate data on individual fork truck profitability, performance, reliability, and applications.
In addition to this primary requirement, the Group is developing data processing systems to improve its operating efficiency, predominantly in the accounting area.
The successful candidate, male or female, for this appointment will have had several years experience in implementing data processing systems in an industrial environment. It is essential that he/she has been involved in the development, implementation and use of a genuine management information system.
Opportunities for promotion within both Harvey and Lex are excellent.
Fringe benefits include 5 weeks' holiday, non-contributory pension scheme, and assistance with relocation costs.
Write or telephone for an application form to M G Williamson, Lex Hire and Leasing, Lower Glory Mill, Woodburn Green, High Wycombe, Bucks. Tel. Bourne End 24942.

TEMPO TIMESHARING LTD.
require
TRAINEE AND EXPERIENCED PROGRAMMERS

to work in Timesharing Mode on our three PDP II Computers.
We are a rapidly expanding organisation owned by our own working members of staff and hence enjoy total independence.
We live in a beautifully restored "listed" Georgian building in Elegant Fitzroy Square, and have a Company Yacht, a Company Ski Club and a Company Ghost!
We also work extremely hard!.
Ring Dudley Evans, Managing Director, Tempo Timesharing Ltd

01-388 1827

P S We also have an immediate use for good PDP II FREELANCERS — Agencies will not be considered.

BOOKS

Laudable aim unfulfilled

Information and Data In Systems, by Borge Langefors and Kjell Samuelson. 117pp. £10.50. Petrocelli/Charter, available through Input Two-Nine, 7 Banstead Road, Purley, Surrey.

"THE purpose of this book is to provide an introduction to and an elementary understanding of data as the means of representing information." This is the opening sentence — did you follow it? It describes a very laudable aim — it's a pity that it fails to achieve it.

The authors, both professors at Stockholm University, assume a considerable amount of specialised knowledge from their readers. If these readers have the required knowledge they don't need to read the book. Indeed, with the proper encouragement, the reader capable of following the text should be able to produce a better, shorter and more accurate monograph on the subject for himself. But with senior academics on the Duke of Wellington's noted epigram — publish or be damned!

Database theory is the name of the game, and the promotional material is confected to slake this voracious market appetite. However, the subject is adequately and more comprehensively covered in the standard textbooks. This book doesn't even provide a useful adjunct — quite the opposite, because it confuses standard terminology. The term "schema" is used interchangeably with "algorithm"; tasks, jobs, programs and processes are not explained and differentiated — or even mentioned.

A good background in maths is a prerequisite, as some of the expressions become fairly complex — so much so that the authors sometimes trip over their arithmetic to get to the "well-known Bayes' theorem or theory of posterior probability".

A contentious argument is handed over as a basic axiom, with a rather bald justifying statement, "natural language is extremely difficult for automata to understand except for 'trivial office routines' . . ." This will dismay many designers of natural language processing systems, and cause much ribald laughter from the fraternity who use English as a data management language on CMC/Microdata equipment.

Perhaps these are the people who are doing the trivial office routines, so are of no consequence to academia.

There is a short discussion of data retrieval principles, but no helpful consideration is given to the subject of evaluating the many alternative techniques. It is no use looking in here if the reader wants practical advice with real system design problems.

Exercises? Plenty. But the reader is treated as an idiot. For example, "List all possible physical obstacles that might cause trouble during a walk to a bus station".

SEAN O'CONNELL

First-class for the novice

Survey and Opinion Research: Procedures for Processing and Analysing, by John A. Sonquist and William C. Dunkelberg. 502pp. £15.95. Prentice-Hall.

TEXTS that are right in one's own field are difficult to read, let alone review. Conflicting sensations of envy (wish I'd written that), scorn (how *could* they say that?) and boredom (so what's new?) cross one's mind.

Envy and a little boredom were my main emotions in this case. I envy the authors their persistence and industry in compiling a book as sensible, comprehensive and thorough as this (and the opportunity). Yet I cannot say I found it interesting to read, not because I know it all (I don't) but because the presentation is so earnest and unlightened by wit or elegance.

So what this book is not is a good introduction to the subject for the non-specialist. It is, however, a first-class book to accompany a course or for reference by the novice practitioner.

The book covers: data structures, editing, coding, data quality control, variable generation, statistical analysis and survey administration. It keeps its objects in view all the time, and it is built round the use of a computer. This is very clearly not a book based on a pre-computer text with cosmetic sections added in later editions. Typically a text like that will explain the statistical techniques, then throw in an odd remark about missing data and then a few paragraphs about computers. In this case, the long chapter on statistics (120pp) *starts* with 30 pages on the basic ideas underlying statistical programs, and goes on to discuss subjects such as missing data before talking about regression. Well done, Sonquist and Dunkelberg.

Everywhere one looks there is a good sense. Just at random, I note the statement, "The main issue in explanatory analysis is importance, not significance." Such a statement can be of enormous value to a beginner in putting into context the many pages on significance tests that make up so many statistical texts.

Another long chapter (67 pp) is devoted entirely to a concrete example which draws together all the points discussed so far.

Apart from the weightiness of the writing, my only criticism is that the illustrative material is difficult to comprehend. But in general the standards of editing and proof reading are outstandingly high. Very well done, Sonquist and Dunkelberg.

BEVERLEY ROWE

THE SALES BIT

Time to call again!

A CLASSIC sales situation is the one where you arrive promptly at the appointed hour only to be told that urgent and unforeseen circumstances necessitate the client sparing you only a few minutes before rushing off to a board meeting or some other high pressure gathering.

Now that is both unfortunate and unfair! There you are, with your early appointment, your planned call, and your agreed exit time, all wound up and ready to go, only to have the carpet pulled from under your feet.

The immediate temptation is to give a brief synopsis of all the points you wish to cover or alternatively attempt to discuss in detail one aspect of your presentation and leave the rest.

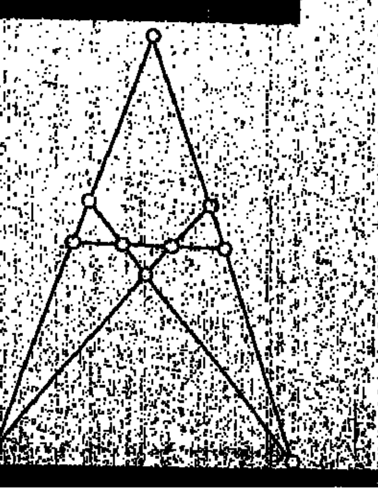
Never be drawn into one of these psychological traps!

In effect the client has already left you! He is almost certainly mentally enmeshed with whatever situation has created the need for his urgent meeting, and your dialogue serves only as a distraction from his immediate problem and is thus a source of aggravation.

One cannot possibly sell anything in that environment. What is more, a summarised sales call will probably destroy the justification of any unexpurgated repeat performance at a later date.

There is only one satisfactory method of handling such a situation. Take the pressure off the man by telling him you understand his problem and feel it would be better for both of you if your meeting were rescheduled, and that you consequently do not need to take up even the small but precious amount of time he has courteously allocated to you. Simply make another appointment for the soonest convenient date for both of you.

He will not only be grateful for your consideration, but will also remember your good manners and professionalism on your subsequent meeting, thus ensuring an empathetic business environment as opposed to the absolute sterility of the alternative situation.

THE TRADER

Puzzle answer